2690 Volume 1 of 2

THOMSON CONSUMER ELECTRONICS

Color Video Camcorder
Basic Service Data

CC422
Additional Models:
CC423

RCA PROSCAN

Technical Publications
P.O. Box 1976 / Indianapolis, Indiana 46206

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*** Not Available**

SAFETY NOTICE
USE ISOLATION TRANSFORMER WHEN SERVICING

Components having special safety characteristics are identified by stars ★ on schematics and on the parts list in this Service Data and its bulletins. Before servicing this instrument, it is important that the service technician read and follow the "Safety Precautions" and "Product Safety Notices" in the Basic Service Data.

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SAFETY PRECAUTIONS

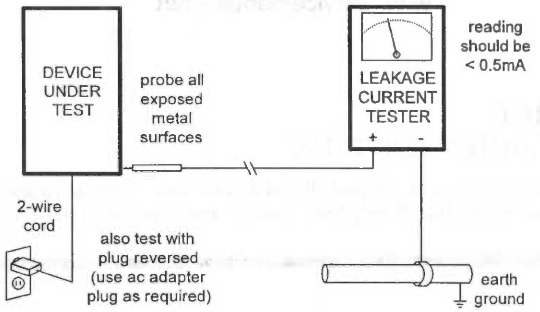
CAUTION: Use only specified power supply and accessories with this camcorder.

1. **Before returning any camcorder, power supply or accessory to the customer,** always make a safety check of the entire instrument, including, but not limited to, the following items:
   a. Be sure that no built-in protective devices are defective and/or have been defeated during servicing. (1) Protective shields are provided to protect both the technician and the customer. Correctly replace all missing protective shields, including any removed for servicing convenience. (2) When reassembling this instrument, be sure to put back in place all protective devices, including, but not limited to, nonmetallic control knobs, insulating fishpapers, adjustment and compartment covers/shields, and isolation resistor/capacitor networks. **Do not operate this instrument or permit it to be operated without all protective devices correctly installed and functioning. Servicers who defeat safety features or fail to perform safety checks may be liable for any resulting damage, and may expose themselves and others to possible injury.**

   b. Be sure that there are no cabinet openings through which an adult or child might be able to insert their fingers and contact a hazardous voltage. Such openings include, but are not limited to, (1) spacing between the picture tube in the electronic view finder and the cabinet cover, (2) excessively wide cover ventilation slots, and (3) an improperly fitted and/or incorrectly secured cabinet cover.

   c. **Cold Check** - Conduct this test on the power supply unit with the camcorder disconnected and repeat with the camcorder, power supply and viewfinder properly assembled. Also, repeat test with and without available approved accessories/cables/connectors. With the instrument AC plug removed from any AC source, connect an electrical jumper across the two AC plug prongs. Place the instrument AC switch in the *on* position. Connect one lead of an ohmmeter to the AC plug prongs tied together and touch the other ohmmeter lead in turn to each exposed screw, all metal parts and to each cable connector. If the measured resistance is less then 1.0 megohm or greater than 5.2 megohm, an abnormality exists that must be corrected before the instrument is returned to the customer. Repeat this test with the instrument AC switch in the *off* position.

   d. **Leakage Current Hot Check -** Conduct this test on the power supply unit with the camcorder disconnected and repeat with the camcorder, power supply and viewfinder properly assembled. Also, repeat test with and without available approved accessories/ cables/connectors. With the instrument completely assembled, plug the AC line cord directly into a 120V AC outlet. (Do not use an isolation transformer during this test.) Use a leakage current tester or a metering system that complies with American National Standards Institute (ANSI) *C101.1 Leakage Current for Appliances* and Underwriters Laboratories (UL) *1492 (Section 67)*. With the instrument AC switch first in the *on* position and then in the *off* position, measure from a known earth ground (metal waterpipe, conduit, etc.) to all exposed metal parts of the instrument (antennas, handle bracket, metal cabinet, screwheads, metallic overlays, control shafts, etc.), especially any exposed metal parts that offer an electrical return path to the chassis. Any current measured must not exceed 0.5 milliamp. Reverse the instrument power cord plug in the outlet and repeat the test. **Any measurements not within the limits specified herein indicate a potential shock hazard that must be eliminated before returning the instrument to the customer , or connecting accessories.**


DEVICE UNDER TEST
probe all exposed metal surfaces
LEAKAGE CURRENT TESTER
+
-
reading should be < 0.5mA
2-wire cord
also test with plug reversed (use ac adapter plug as required)
earth ground

   e. **Interconnected Equipment AC Leakage Test -** Avoid shock hazards. Do not connect this camcorder to a TV set, VCR or accessory that exhibits excessive leakage currents. If available, the VCR or television instrument to which this camcorder is connected should have the cold check and the leakage current hot check performed.

   f. **X-Radiation and High Voltage Limits** - Because the picture tube in the electronic viewfinder is the primary potential source of x-radiation in the camcorder, it is specially constructed to prohibit x-radiation emissions. For continued x-radiation protection, the replacement picture tube must be the same type as the original. Also, because the picture tube shields and mounting hardware perform x-radiation protection functions, they must be correctly in place.

   High voltage must be measured each time servicing is performed that involves B+, horizontal deflection or high voltage. Read and apply the high voltage limits and, if the chassis is so equipped, the x-radiation protection circuit specifications given on instrument labels and in the *Product Safety Warning* on the service data chassis schematic.

   High voltage is maintained within specified limits by close-tolerance safety-related components/adjustments in the high voltage circuit. If high voltage exceeds specified limits, check each component specified on the chassis schematic and take corrective action.

2. Read and comply with all caution and safety-related notes on or inside the camcorder, power supply or accessory cabinets, and picture tube in the electronic viewfinder.

3. **Design Alteration Warning** - *Do not* alter or add to the mechanical or electrical design of the camcorder, power supply or accessories. Design alterations and additions, including, but not limited to, circuit modifications and the addition of items such as auxiliary audio and/or video output connections, might alter the safety characteristics of this instrument and create a hazard to the user. Any design alterations or additions may void the FCC's authorization to operate the equipment, and may void the manufacturer's warranty and may make you, the servicer, responsible for personal injury or property damage resulting therefrom.

4. **Picture Tube Implosion Protection Warning** - The picture tube in the electronic viewfinder employs integral implosion protection. For continued implosion protection, replace the picture tube only with one of the same type number. Do *not* remove, install, or otherwise handle the picture tube in any manner without first putting on shatterproof goggles equipped with side shields. People not so equipped must be kept safely away while picture tubes are handled. Keep the picture tube away from your body.

5. Observe original lead dress. Take extra care to assure correct lead dress in the following areas: (a) near sharp edges, (b) near thermally hot parts - be sure that leads and components do not touch thermally hot parts, (c) the AC supply, (d) high voltage, and (e) antenna wiring. Always inspect in all areas for pinched, out-of-place, or frayed wiring. Do not change spacing between components, and between components and the printed-circuit board. Check AC power cord for damage.

6. Components, parts and/or wiring that appear to have overheated or are otherwise damaged should be replaced with components, parts or wiring that meet original specifications. Additionally, determine the cause of overheating and/or damage and, if necessary, take corrective action to remove any potential safety hazard.

7. **Product Safety Notice** - Many camcorder, power supply and accessory electrical and mechanical parts have special safety-related characteristics, some of which are often not evident from visual inspection, nor can the protection they give necessarily be obtained by replacing them with components rated for higher voltage, wattage, etc. Parts that have special safety characteristics are identified in this service data by a star (★) on schematics and in the parts list. Use of a substitute replacement that does not have the same safety characteristics as the recommended replacement part in this service data parts list might create shock, fire and/or other hazards. Product Safety is under review continuously and new instructions are issued whenever appropriate. For the latest information, always consult the appropriate current service literature.

SPECIFICATIONS

General

Power Requirement	9.6VD
Power Consumption	8.0 watts (normal)
Dimension	4 1/2 inch (W) 8 1/8 inch (H) 12 1/4 inch (D)
Weight	4.4lbs.
Camera Mount	1/4 in. hole/#20 thread

Camera

Scanning	525 lines/60 fields/ 30 frames
Pick-up Device	1/4 inch CCD Imager
Minimum Illumination	8 lux
Lens Zoom Ratio	12:1
Lens Aperture	f1.6
Lens Diameter	46mm
Microphone	74dBspL

VCR

Format	VHS
Record/Playback System	Two video record/ playback heads One flying erase head
Video Signal	EIA standard NTSC
Video Output Signal	1Vp-p/75 ohms
Fast Forward/Rewind Time	6 min. nominal
Audio Output Signal	316mVrms
Power Supply	221355

Note: Specifications are subject to change without notice.

LEADLESS COMPONENT REMOVAL

Replacement Procedure for Leadless (Chip) Removal

The following procedures are recommended for the replacement of the leadless components used in this unit.

1. Preparation for replacement
   a. Soldering Iron
      Use a pencil-type soldering iron using less than 30 watts.
   b. Solder
      Eutectic Solder (Tin 63%/Lead 37%) is recommended.
   c. Soldering time
      Do not apply heat for more than 4 seconds.
   d. Preheating
      Leadless capacitors must be preheated before installation. (130 degrees - 150 degrees C).

Note: a. Leadless component must not be reused after removal.
b. Excessive mechanical stress and rubbing of the component electrode must be avoided.

2. Removing the leadless component

Grasp the leadless component body with tweezers and alternately apply heat to both electrodes. When the solder on both electrodes is melted, remove the leadless component with a twisting motion.

Note: a. Do not attempt to lift the component off the board until the component is completely disconnected from the board by a twisting action.
b. Take care not to break the copper foil on the printed circuit board.

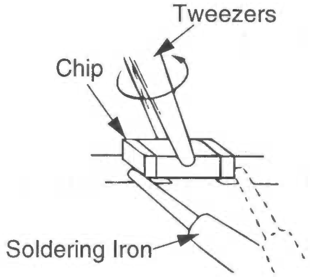


Fig. 1 - Leadless Component Removal

3. Installing the leadless component
   a. Presolder the contact points of the circuit board.

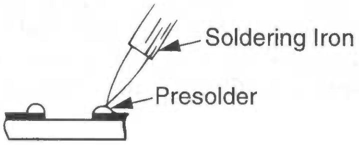


Fig. 2 - Leadless Component Installation

   b. Press the part downward with the tweezers and solder both electrodes as shown below.

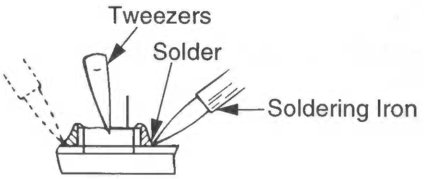


Fig. 3 - Leadless Component Installation

Note: Do not glue the replacement leadless component to the circuit board.

CLEANING AND LUBRICATION

Tape Mechanism Cleaning

Periodic cleaning is necessary to insure optimum performance of the tape mechanism. Use Kim Wipes (RCA stock number 145871) and solvent (RCA stock number 145870) to clean the tape transport mechanism.

Use the Head Cleaning Kit (RCA stock number 182251) to clean the video heads, the flying erase head and the audio/control (A/C) head.

Note: When cleaning the video heads, wipe the cleaning stick across the heads in the direction of head movement. Wiping in a vertical direction may damage the heads.

The following parts require periodic cleaning to insure optimum performance:

1. Capstan Motor Flywheel and Pulley of the Opposite Reel Gear Block
2. All Tape Guide Posts and Poles
3. Tension Band
4. Supply Reel Table
5. Take-up Reel Table
6. Pressure Roller
7. Capstan Belt
8. Pad Sections of the Supply/Take-up Main Brakes in the Reel Gear Block

Tape Mechanism Lubrication

The tape transport mechanism is properly lubricated during assembly at the factory and additional lubrication should not be required during the first year of operation. Periodic lubrication (after every 1,000 hours of operation) is recommended, however, more frequent lubrication may be required if the unit is subjected to extreme environmental conditions. Refer to the "Mechanism Exploded View" for grease and oil locations. Refer to the "Replacement Parts List" for the stock numbers of the recommended oil and grease.

Note: Excessive lubricant may be transferred to other areas causing malfunction. Use the lubricants sparingly.

Note: When relubricating, remove old lubricant first, then sparingly apply new lubricant.

The following parts require grease after every 1,000 hours of operation.

1. Between the Cassette Holder Lock Drive Arm and the Chassis
2. Cassette Holder Lock
3. Between the Cam Gear Arm and the Reel Gear Block
4. Driving Gear
5. Between the Cylinder Base and the Guide Roller Rail
6. Between the Pressure Roller Arm and the Take-up Guide Arm
7. Cassette Holder Spring
8. Between both Cassette Holder Rear Arm and Gutters on the Chassis
9. Between the Tension Arm and the Supply Guide Roller Base
10. Between Cam Gear Arm and Chassis
11. Between the Guide roller Rail and Chassis
12. Between the Cassette Holder Lock Slider and Chassis

The following parts require oil after every 1,000 hours of operation.

1. Shaft of the Pressure Roller Control Arm
2. Shaft of the Driving Gear
3. Shaft of the Cam Gear Arm
4. Shaft of the Take-up Guide Arm
5. Shaft of the Supply Loading Cam Gear
6. Shaft of the Take-up Loading Cam Gear
7. Shaft of the Pressure Roller Arm
8. Shaft of the Tension Arm
9. Shaft of the Loading gear
10. Shaft of the Supply Reel Table
11. Shaft of the Take-up Reel Table
12. Engaged Sections of the Cam Gear Arm, Pressure Roller Assembly and the Pressure Roller Control Arm

Note: Parts which are not listed do not require lubrication, except in those cases where parts are being replaced. In which case use appropriate lubricant as indicated on Exploded View.

TOOLS/TEST EQUIPMENT REQUIREMENTS

The following tools and test equipment are required when servicing the models covered in this service publication.

Test Equipment

Oscilloscope - dual trace, 25MHz bandwidth, delayed sweep, channel invert capability, 10:1 probe

Digital Voltmeter

Vectorscope

Color Video Monitor

Tripod

3,200 Degrees Kelvin Light Box

or

Reflective Charts using 3,200 Degrees Kelvin Quartz Lighting

Waveform Monitor (Optional)

Personal Computer (IBM® Compatible)

RS-232C Cable (9 pin or 32 pin)

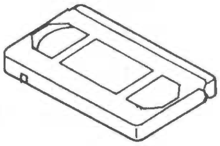
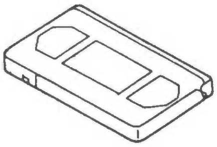
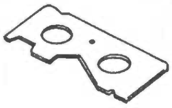
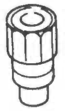
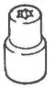
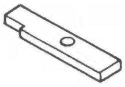
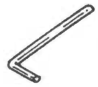
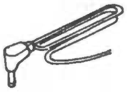
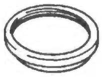
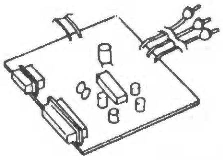
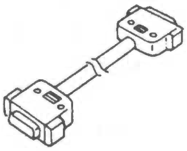
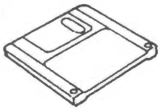
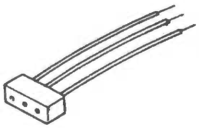
DSP Jig

Light Meter

Color Temperature Conversion Filter (C12)

DC Power Supply - 0 to 12VDC/2.0amps

Servicing Aids

1. BACK TENSION METER No.7099004 	2. ALIGNMENT TAPE (MH-2) No.7099046 		3. MASTER PLANE No.7099279 
4. TORQUE GAUGE No.7099039 	5. TORQUE GAUGE ADAPTER No.7099204 	6. REEL DISK HEIGHT JIG No.7099038 	7. HEXAGONAL WRENCH 0.9mm : No.7099202 
8. EXTENSION POWER CABLE No.7099326 	9. LIGHT BALANCING FILTER C12 (46mmϕ) No.7099369 	10. DSP-R JIG No.7099448 	★11. PERSONAL COMPUTER
★12. PERSONAL COMPUTER 9-PIN or 25-PIN CABLE 	※13. CAMERA ADJ. FLOPPY DISK 	14. 3-PIN EXTENSION CABLE No.7069066 	

ABBREVIATIONS

A	A. DUB	Audio Dubbing
	A/D	Analog to Digital Converter
	ACC	Automatic Color Control
	ADD	Adder
	AF	Autofocus
	AFC	Automatic Frequency Control
	AGC	Automatic Gain Control
	AGC KILLER	AGC Killer Voltage
	AI	Artificial Intelligence
	AIC	Automatic Iris Control
	ALC	Automatic Level Control
	AMP	Amplifier
	APC	Automatic Phase Control
	ASBL	Assemble
	AUD.	Audio
	AUX	Auxilary
B	B (BLU)	Color Signal Blue
	B-YL	Color Difference Signal B-YL
	BATT	Battery
	BF	Burst Flag
	BG	Burst Gate
	BGP	Burst Gate Pulse
	BLK	Blanking
	BPF	Bandpass Filter
	BUF	Buffer
C	C	Chrominance Signal
	CAM	Camera
	CATV	Cable TV
	CBLK	Composite Blanking
	CCD	Charge Coupled Device
	CDS	Correlated Double Sampling
	C.FG	Capstan Frequency Generator
	C.FREE RUN	Capstan Free Run
	C.MEMORY	Counter Memory
	C.PAUSE	Camera Pause
	C.RESET	Counter Reset
	C.REVERSE	Count Reverse
	C.SYNC	Composite Sync
	CAPST	Capstan
	CARRI	Carrier
	CG	Character Generator
	CH	Channel
	CHARA	Character
	CHD	Camera Horizontal Drive Pulse
	CHROMA	Chrominance
	CNR	Chroma Noise Reducer
	COM	Common
	COMP.-EXP	Compander-Expander
	COMPA	Comparator
	COMPE	Compensator
	COMPO	Composite
	CONT	Control
	CONV	Converter
	COUNT	Counter
	CP	Clamp Pulse
	CS	Communication Signal
	CST	Cassette
	CTL	Control
	Cy	Cyan Color Signal
	CYL	Cylinder
D	D. ZOOM	Digital Zoom
	D/A	Digital-to-Analog
	D/W	Dark/White
	D-µP	Digital Miroprocessor
	D-D	Direct Drive
	DA	Double Azimuth
	DEEMPHA	Deemphasis
	DEF	Deflection
	DEMOD	Demodulator
	DET	Detector
	DIF.AMP	Differential Amplifier
	DISP	Display
	DL	Delay Line
	DO	Dropout
	DOC	Dropout Compensator
	DSP	Digital Signal Processor
E	E. ZOOM	Electronic Zoom
	E-E	Electronic-to-Electronic
	EA-ROM	Electrically Alterable Read Only Memory
	EEP-ROM	Electrically Erasable Programmable Read Only
	EIS	Electronic Image Stabilizer
	EPHA	Emphasis
	EQ	Equalizer
	ESS	Supply End Sensor
	EST	Take-up End Sensor
	EVF	Electronic Viewfinder
	EXT	External
F	F. ADV	Frame Advance
	F.FWD	Fast Forward

ABBREVIATIONS (Continued)

	F/F	Flip-Flop
	F/V	Frequency-to-Voltage Converter
	FB	Feed Back
	FE	Full Erase
	FG	Frequency Generator
	FM	Frequency Modulation
	FREQ.	Frequency
	fsc	Sub Carrier Frequency
	FWD	Forward
G	GEN	Generator
	GND	Ground
H	H (HORIZ)	Horizontal
	HB	Hi-Band
	HBF	Horizontal Burst Flag
	HD	Horizontal Drive
	Hi-Fi	High fidelity
	HLT	Halt
	HPF	High Pass Filter
I	I/O	Input/Output
	IF	Intermediate Frequency
	INDI	Indicator
	INT	Internal
	INV	Inverter
	IR	Infrared Ray
L	L/R	Left/Right
	LB	Low-Band
	LCD	Liquid Crystal Display
	LIN	Linear
	LM	Loading Motor
	LOG	Logarithm
	LP (H)	Long Play (Active High)
	LPF	Lowpass Filter
	LUMA	Luminance
M		M.BRAKE Main Brake
	M.CUT	Monitor Cut
	M.STATE	Mechanism State
	M.STOP	Memory Stop
	MAN	Manual
	MIC	Microphone
	MIX	Mixer
	MMV	Monostable Multivibrator
	MOD	Modulator
N	NEG	Negative
	NFB	Negative Feedback
	NOR	Normal
	NR	Noise Reduction
O	OB	Optical Black
	OSC	Oscillator
	OSD	On-Screen Display
P	P in P	Picture In Picture
	PB	Playback
	PG	Pulse Generator
	PLL	Phase Locked Loop
	POS	Positive
	PROG	Program
	PROT.	Protector
	PWM	Pulse Width Modulator
R	R (RED)	Red color Signal
	R-YL	Color Difference Signal R-YL
	REC	Record
	RECT	Rectifier
	REF	Reference
	REG	Regulator
	REV	Reverse
	REW	Rewind
	RF	Radio Frequency
	RM	Reel Motor
	ROM	Read Only Memory
	RSS	Supply Reel Sensor
	RST	Take-up Reel Sensor
S	S. Brake	Supply Brake
	S.REEL	Supply Reel
	S.TRACK	Slow Tracking
	S/H	Sample and Hold
	SAW	Sawtooth Signal
	SC1	3.58MHz Subcarrier Signal1 (0 Degree Phase Shifted)
	SC2	3.58MHz Subcarrier Signal 2 (90 Degree Phase Shifted)
	SEP	Separator
	SOL	Solenoid
	SP/LP	Standard Play/Long Play
	SRCH	Search
	SRV	Servo
	STABI	Stabilizer

ABBREVIATIONS (Continued)

	STBY	Standby Mode
	SW	Switch
	SW15Hz	15Hz Head Switching
	SW30Hz	30Hz Head Switching
	SYSCON	System Control
T	T (TELE)	Telephoto
	T.BRAKE	Take-up Brake
	T.REEL	Take-up Reel
	T/W	Telephone/Wide
	TP	Test Point
	TRS	Transfer
V	V.AGC	AGC Voltage
	V (VERT)	Vertical
	V/F	Voltage-to-Frequency Converter
	V.REF	Reference Voltage
	V.DRV	Vertical Drive
	V.DUB	Video Dubbing
	VCO	Voltage Controlled Oscillator
	VF	Focus Voltage
	VOL	Volume
	VP	Vertical Pulse
	VCXO	Voltage Controlled Crystal Oscillator
W	WHT	Color Signal White
	WIDE	Wide Angle
	WHD	Wide Horizontal Drive
	WHT BAL	White Balance Control
Y	Y	Luminance Signal
	Y/C	Luminance/Chrominance
	Ye (YEL)	Color Signal Yellow
	YL	Luminance Signal (Low Component)
Miscellaneous	μ P	Microprocessor
	3.58MHz	Color Sub Carrier

LEADLESS COMPONENT IDENTIFICATION

Leadless Transistors

The Identification numbers for leadless transistors are indicated by a code on the surface, using one letter, one letter and one numeral, two letters, two letters and one numeral, two numerals, two numerals and one letter, or three letters. Use these codes and the following table to identify the component.

Code	Transistor Number	Code	Transistor Number
(Transistor)			
A	2SB709	H	2SA1036K
A (R)	2SB1218R (AR)	I	2SB792
A (S)	2SB766S (AS)	J	2SC2735
A (J)	2SB1000J (AJ)	K	2SA1036
B	2SC1621	K (P)	2SC2413P (KP)
B (J)	2SB1001J (BJ)	L	2SC2462
B (R)	2SC4081R (BR)	M	2SA1052
B (R)	2SC2412AR (BR)	N	2SC1653
B (S)	2SC2412KS (BS)	N (E)	2SD1306E (NE)
C	2SA1122	P	2SD814
C (L)	2SD999L (CL)	P (E)	2SA1171E (PE)
C (R)	2SB710R (CR)	Q	2SC2620
C (R)	2SC4097R (CR)	Q (O)	2SC27140 (QO)
C (R)	2SC2411R (CR)	R	2SC2618
C (Q)	2SC2411KQ (CQ)	S	2SA1121
D	2SA2463	S (Q)	2SC6082KQ (SQ)
D (L)	2SB798L (DL)	U	2SC2404
E	2SA1022	W	2SD602
F	2SC2619	Y	2SD601
F (S)	2SA1037KS (FS)	Y (R)	2SD1819R (YR)
F (R)	2SA1576R (FR)	Z	2SD874
AA (S)	2SD1757KS (AAS)	DB (R)	2SD1766R (DBR)
BC (R)	2SB1188R (BCR)	IR (D)	2SA1484D (IRD)
BF (R)	2SB1308R (BFR)	1D (T)	2SD1328T (1DT)
1C (R)	2SB902R (1CR)	L (7)	2SC2812 (7) (L7)
B (3)	2SC1621 (3) (B3)	M (6)	2SA812 (6) (M6)
C (7)	2SA811 (7) (C7)	M (6)	2SA1179 (6) (M6)
F (2)	2SC1009 (2) (F2)	N (4)	2SC1653 (4) (N4)
L (6)	MMBC1623 (6) (L6)	R (45)	2SC3585 (45 (R45)
D (16)	2SC1622A (16) (D16)	Y (25)	NTM3906 (25) (Y25)
R (25)	2SC3356 (25) (R25)	X1	IMX1
R (35)	2SC3583 (35) (R35)	Y1	FMY1
1 (D)	2SC3127D (1D)	Y3	FMY3
S1	FMS1	Z1	IMZ1
S2	FMS2	Z2	IMZ2
T1	IMT1	5K	XN4401
W1	FMW1		
W2	FMW2		
W3	FMW3		
4R	XN1C301		
5H	XN4501		

Code	Transistor Number	Code	Transistor Number
(Digital Transistor)			
O4	DTC114TK	24	DTC114EU
O6	DTC144TK	25	DTC124K
13	DTA143EK	25	DTC124EU
15	DTA124K	26	DTC144K
15	DTA124EU	26	DTC144EU
16	DTA144EK	33	DTA143XK
16	DTA144EU	43	DTC143XK
23	DTC143EK	52	DTA123YK
24	DTC114EK	64	DTC114YK
6B	UN5112	8B	UN5212
F52	DTB123	H27	DTC363EK
G21	DTD113ZK	R31	FP1L2Q
H03	DTC343TK	G1	FMG1
A1	FMA1	G2	FMG2
A2	FMA2	D2	IMD2
B2	IMB2	G5	FMG2
C2	FMC2	H2	IMH2

Note: The codes of the digital transistors show only the transistor numbers.

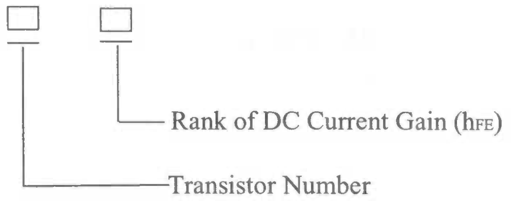
Code	Transistor Number	Code	Transistor Number
(FET)			
G	2SK302	X (4)	2SK94 (4) (X4)
J	2SK208	X (17)	2SK425 (17) (X17)
K	2SK160	Y	2SK167
W	2SK322	Z	2SK217
X	2SK157	3 (O)	2SK621 (O) (3O)
XA	2SK980	1M	2SA1052
3	2SK620	2B	2SK374
1F	2SK321		
1M	2SA1052		

Identification With Two Letters

Read the code as follows and then refer to the appropriate chart to identify the component.

Example:

Code	Number
CD	2SA1122D
LD	2SC2462D



LEADLESS COMPONENT IDENTIFICATION (Continued)

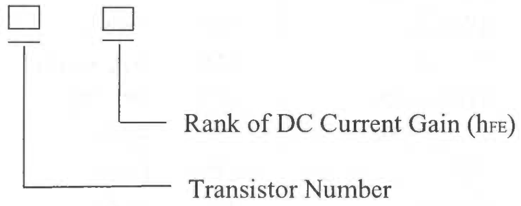
Identification With One Letter and One Numeral

Read the code as follows and then refer to the appropriate chart to identify the component.

Letter	Transistor Number
L	2SC1623

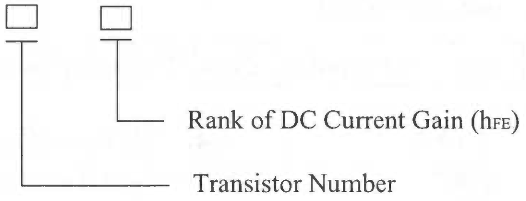
Example:

Code	Number
L5	2SC1623 (5)
L6	2SC1623 (6)


Rank of DC Current Gain (h_{FE})
Transistor Number

Example:

Code	Number
1D	2SC3127D


Rank of DC Current Gain (h_{FE})
Transistor Number

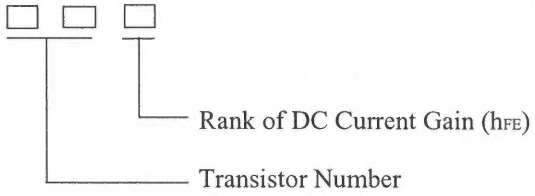
Note: Codes S1, S2, T1, W1, W2, W3, X1, Y1, Y3, Z1 and Z2 show only the transistor numbers.

Identification With One Numeral and Two Letters

Read the code as follows and then refer to the appropriate chart to identify the component.

Example:

Code	Number
1FQ	2SK321Q

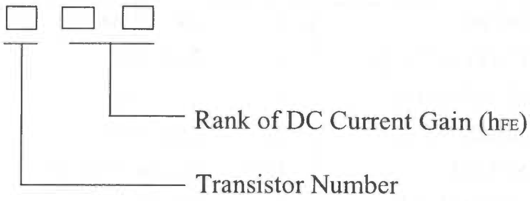

Rank of DC Current Gain (h_{FE})
Transistor Number

Identification With One Letter and Two Numerals

Read the code as follows and then refer to the appropriate chart to identify the component.

Example:

Code	Number
R25	2SC3356

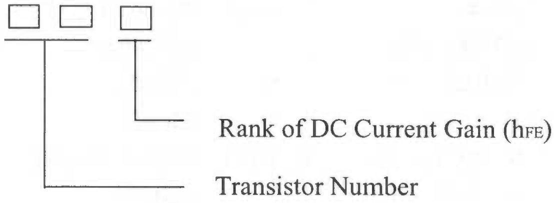

Rank of DC Current Gain (h_{FE})
Transistor Number

Identification With Two Letters and One Numeral

Read the code as follows and then refer to the appropriate chart to identify the component.

Example:

Code	Number
DV5	2SD596

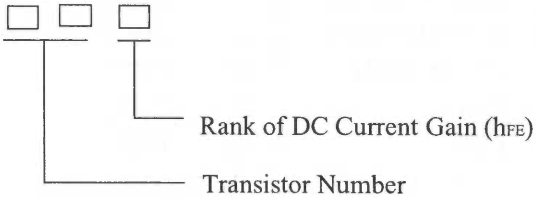

Rank of DC Current Gain (h_{FE})
Transistor Number

Identification With Three Letters

Read the code as follows and then refer to the appropriate chart to identify the component.

Example:

Code	Number
AAS	2SD1757KS


Rank of DC Current Gain (h_{FE})
Transistor Number

1-B3

LEADLESS COMPONENT IDENTIFICATION (Continued)

Leadless Diodes

The identification numbers for leadless diodes are indicated by a code on the surface, using one letter, one letter and one numeral, two letters, two letters and one numeral, two numerals, two numerals and one letter, or three numerals. Use these codes and the following table to identifiy the component.

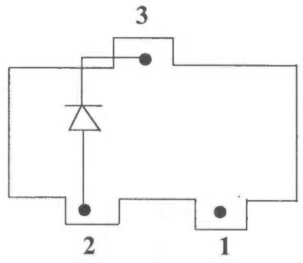
Code	Diode Number	Code	Diode Number
(Diode)			
BE	1SV172		
MC	MA153	MC	MA143
MH	MA151K	MH	MA141K
MN	MA151WA	MN	MA141WA
MO	MA152WA		
MT	MA151WK	MT	MA141WK
MU	MA152WK		
M1D	MA160	M1P	MA714
M2A	MA122	S1A	1SR143
N	DAN202K	Z	DA106K
A3	1SA2835	A4	HSM2836C
A5	2SA2837	A6	HSM2838C
C1	HSM88S	C2	HSM276S
1A	MA110		
3.0L	MA303OL	4.3L	MA3043L
4.7M	MA3047M	5.1M	MA3051M
5.1L	MA3051L	5.6M	MA3056M
6.2L	MA3062L	6.8M	MA3068
6.8M	MA3068M	7.5H	MA3075H
7.5L	MA3075L	8.2M	MA3082M
9.1M	MA3091	9.1M	MA3091M
10L	MA3100L	56M	MA3056M
75L	MA3075L	82M	MA3082M
91M	MA3091M		
20	HZM6-B	27	RD2.7M-B
30	RD3.OM-B	51	RD5.1M-B2
56	RD5.6M-B	91	RD9.1M-B
102	RD10M-B2	122	RD12M-B2
163	RD16M-B3	182	RD18M-B2
271	RD2.7M-B	272	RD2.7M-B2
301	RD3OM-B	362	RD3.6M-B2
391	RD3.9M-B1	512	RD5.1m-B2
561	RD5.6M-B	621	RD6.2M-B1
681	RD6.8M-B	683	RD6.8M-B3
911	RD9.1M-B		

Note: The diodes listed in the chart above have the following internal block structures.

Example: A

The diodes that use the internal block structure shown below are as follows:

Code: MH

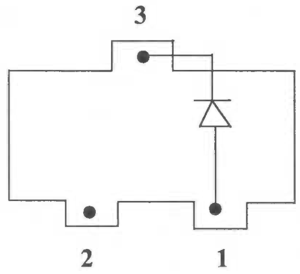


Note: The internal block structure is viewed from the surface with the code.

Example: B

The diodes that use the internal block structure shown below are as follows:

Code: Z

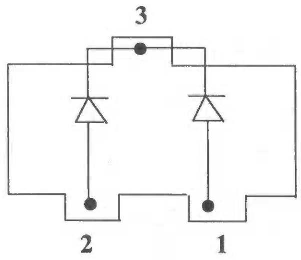


Note: The internal block structure is viewed from the surface with the code.

Example: C

The diodes that use the internal block structure shown below are as follows:

Code: MN, MO, A3



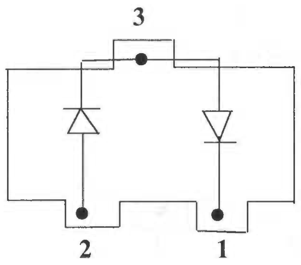
Note: The internal block structure is viewed from the surface with the code.

LEADLESS COMPONENT IDENTIFICATION (Continued)

Example: D

The diodes that use the internal block structure shown below are as follows:

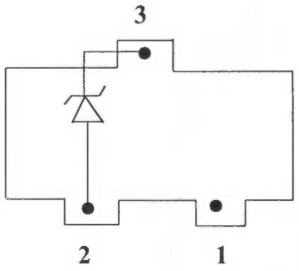
Code: BE, MC, C1, C2



Note: The internal block structure is viewed from the surface with the code.

Example: E

The zener diodes use the internal block structure shown below.

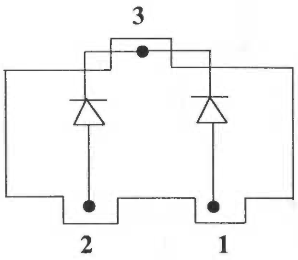


Note: The internal block structure is viewed from the surface with the code.

Example: F

The diodes that use the internal block structure shown below are as follows:

Code: MT, MU, N

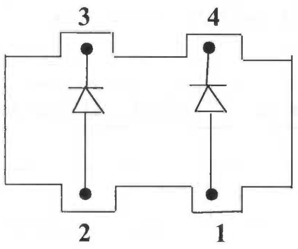


Note: The internal block structure is viewed from the surface with the code.

Example: G

The diodes that use the internal block structure shown below are as follows:

Code: M1D, M1P

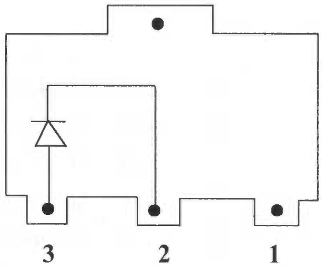


Note: The internal block structure is viewed from the surface with the code.

Example: H

The diodes that use the internal block structure shown below are as follows:

Code: S1A

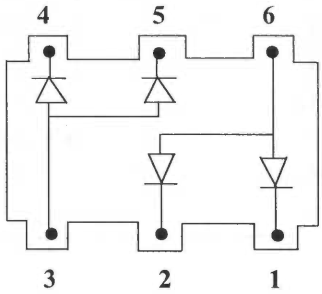


Note: The internal block structure is viewed from the surface with the code.

Example: I

The diodes that use the internal block structure shown below are as follows:

Code: M2A



Note: The internal block structure is viewed from the surface with the code.

LEADLESS COMPONENT IDENTIFICATION (Continued)

Leadless Resistors

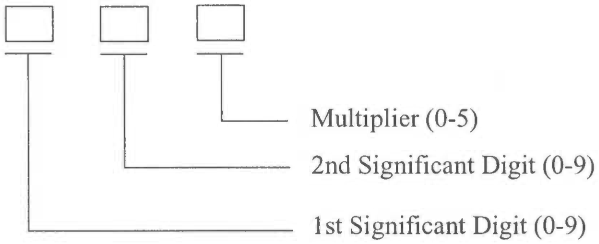
The resistor value is indicated on the surface of the component, using a three digit number, or one letter and one numeral.

Identification for Three Digit Numbers

Read the code following the same procedure used when reading the color code of discrete resistors.

Example:

Code	Value
330	33 X 10^0 = 33 ohms
561	56 X 10^1 = 560 ohms
123	12 X 10^3 = 12k ohms
1R2	1 + 0.2 = 1.2 ohms (R = decimal point)



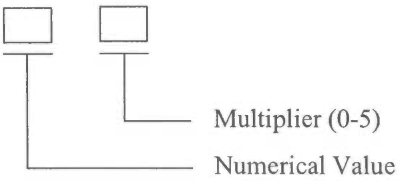
Identification With One Letter and One Numeral

Use the code and the following chart to identify the component value.

Letter	Value	Letter	Value	Letter	Value
A	1	J	2.2	S	4.7
C	1.2	L	2.7	U	5.6
E	1.5	N	3.3	W	6.8
G	1.8	Q	3.9	Y	8.2

Example:

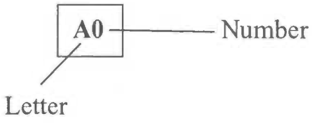
Code	Value
A1	1 X 10^1 = 10 ohms
G2	1.8 X 10^2 = 180 ohms
L3	2.7 X 10^3 = 2,700 ohms
S4	4.7 X 10^4 = 47k ohms
W5	6.8 X 10^5 = 680k ohms



Leadless Capacitors

The capacitor value is indicated on the surface of the component, using the body color and one letter, or one letter and one numeral.

Identification With One Letter and One Numeral



Code	Value	Code	Value
A0	1(PF)	A2	100 (PF)
H0	2	C2	120
M0	3	E2	150
d0	4	G2	180
f0	5	J2	220
m0	6	L2	270
n0	7	N2	330
t0	8	Q2	390
y0	9	S2	470
A1	10 (PF)	U2	560
C1	12	W2	680
E1	15	Y2	820
G1	18	J1	22
L1	27	N1	33
Q1	39	S1	47
U1	56	W1	68
Y1	82		

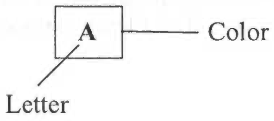
Code	Value	Code	Value
A3	0.001 (µF)	E3	0.0015 (µF)
J3	0.0022	N3	0.0033
S3	0.0047	W3	0.0068
A4	0.01 (µF)	E4	0.015
J4	0.022	N4	0033
S4	0.047	U4	0.056
W4	0.058	A5	0.1 (µF)

Example:

Code	Value
A0	1PF
A1	10PF

LEADLESS COMPONENT IDENTIFICATION (Continued)

Identification With Body Color and One Letter



Body Color	Letter	Value	Body Color	Letter	Value
Red	A	1 (PF)	Blue	A	100 (PF)
	C	2		C	120
	E	3		E	150
	G	4		G	180
	J	5		J	220
	L	6		L	270
	N	7		L	330
	Q	8		Q	390
	S	9		S	470
Black	A	10 (PF)		U	560
	C	12		W	680
	E	15		Y	820
	G	18	White	A	0.001 (µF)
	J	22		E	0.0015
	L	27		J	0.0022
	N	27		L	0.0027
	Q	39		N	0.0033
	S	47		S	0.0047
	U	56		W	0.0068
	W	68	Green	A	0.01 (µF)
	Y	82		E	0.015
Yellow	A	0.1(µF)		J	0.022
				N	0.033
				S	0.047
				U	0.056
				W	0.068
				Y	0.082

Example:

Color	Code	Value
Red	A	1PF
Black	A	10PF

Leadless Jumpers

Leadless jumpers are identified as shown below.

(1)	(2)	(3)	(4)
000	00	0	00

DISASSEMBLY

Disassembly Subindex

AC Adapter/Charge (221355) Disassembly

	Image Indicator	Page Number
Bottom Case Removal	1-F1	1-39
Main Circuit Board/Sub Circuit Board Removal	1-F2	1-40
Top Case Removal	1-F1	1-39

Electronic Viewfinder Disassembly

	Image Indicator	Page Number
EVF Holder/Cable Guide/Cable Holder Removal	1-C8	1-22
EVF Neck Block Removal	1-D1	1-23
EVF Top Case/Light Cover Removal	1-D1	1-23
Light Terminal Removal	1-D1	1-23
Microphone Removal	1-D1	1-23
Video Process Circuit Board/Bottom Case Removal	1-D2	1-24

Instrument Disassembly

	Image Indicator	Page Number
A/V Jack Cover/Power Switch Knob Removal	1-C3	1-17
Camera Block/Tripod Mount/VCR Block/ Right Case Removal	1-C3	1-17
Cassette Lid Removal	1-C2	1-16
Control Circuit Board/Hood Holder/ Lens Block/CCD Image Sensor/ Sensor/Process Circuit Board Removal	1-C7	1-21
Electronic Viewfinder (EVF) Removal	1-C2	1-16
Handle/Zoom Switch/Hand Strap Removal	1-C5	1-19
Left Case Removal	1-C2	1-16
Lens Hood Removal	1-C2	1-16
Main Circuit Board/Tape Transport Mechanism Removal	1-C6	1-20

Lens Block Disassembly

	Image Indicator	Page Number
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EVF Right Case/EVF Left Case Removal	1-D2	1-24
LCD Drive Circuit Board/Back Light/LCD Unit and Case Removal	1-D2	1-24

Mechanism Disassembly

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Cassette Holder Lock Drive Arm Removal	1-E8	1-38
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Cassette Holder Lock Slider Removal	1-E6	1-36
Cassette Holder/Supply Sensor Circuit Board Removal	1-D5	1-27
Cylinder Base Removal	1-E4	1-34
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Full Erase (FE) Head Removal	1-D7	1-29
Loading Gear Removal	1-E6	1-36
Lower Cylinder Removal	1-D8	1-30
Pressure Roller Assembly Removal	1-D8	1-30
Pressure Roller Control Arm Removal	1-E5	1-35
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Supply End Sensor/Loading Motor Removal	1-D7	1-29
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Supply Sub Brake Removal	1-E4	1-34
Take-up Guide Arm Removal	1-E5	1-35
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INSTRUMENT DISASSEMBLY

Before beginning disassembly, make sure that the power supply/battery is disconnected from the instrument. Perform the disassembly procedures in the order presented. When reassembling, use the reverse procedure unless specific instructions are provided. Take care to dress all leads/cables as they were originally.

Lens Hood Removal (Fig. 1)

1. Remove the lens cap.
2. Turn the lens hood in the direction of the arrow to remove.

Cassette Lid Removal (Fig. 1)

1. Remove two (2) screws (A) holding the cassette lid.
2. Lift the cassette lid from the top of the cassette holder.

Left Case Removal (Figs. 1, 2)

1. Place the EVF in the position shown in Fig. 2.
2. Open the A/V jack cover.
3. Remove five (5) screws (B) holding the left case.
4. Remove one (1) screw (C) holding the EVF holder.
5. Remove four (4) screws (D) holding the right case.
6. Remove the left case from the right case.

Electronic Viewfinder (EVF) Removal (Figs. 1, 2)

1. Disconnect one (1) connectors on the Main circuit board (Fig. 1).
2. Remove three (3) screws (E) holding the EVF holder (Figs. 1, 2).
3. Remove the EVF from the right case.

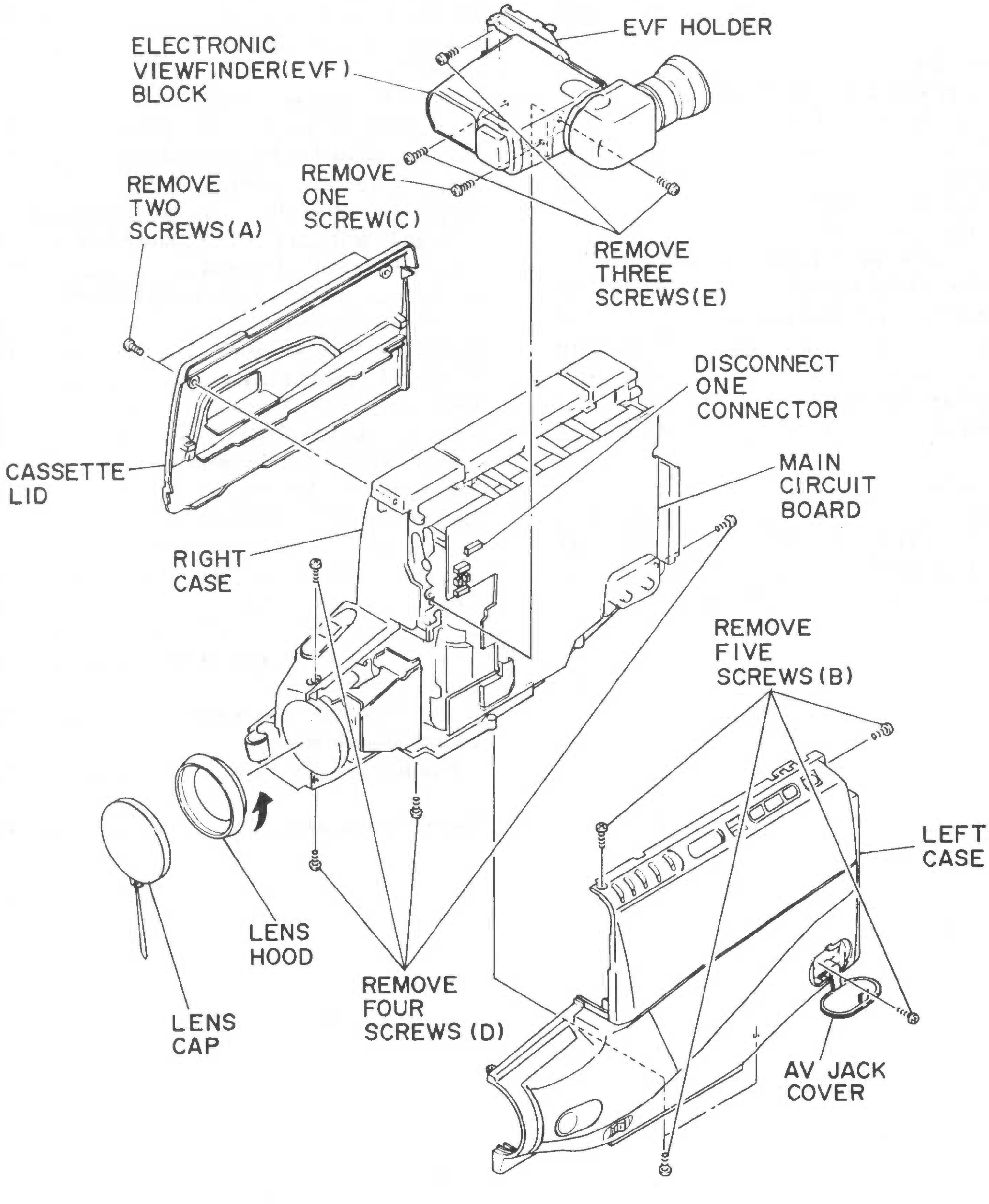
EVF HOLDER
ELECTRONIC VIEWFINDER(EVF) BLOCK
REMOVE TWO SCREWS(A)
REMOVE ONE SCREW(C)
REMOVE THREE SCREWS(E)
DISCONNECT ONE CONNECTOR
MAIN CIRCUIT BOARD
CASSETTE LID
RIGHT CASE
REMOVE FIVE SCREWS(B)
LEFT CASE
LENS HOOD
LENS CAP
REMOVE FOUR SCREWS (D)
AV JACK COVER

Fig. 1 - Lens Hood/Cassette Lid/Left Case/Electronic Viewfinder (EVF) Removal

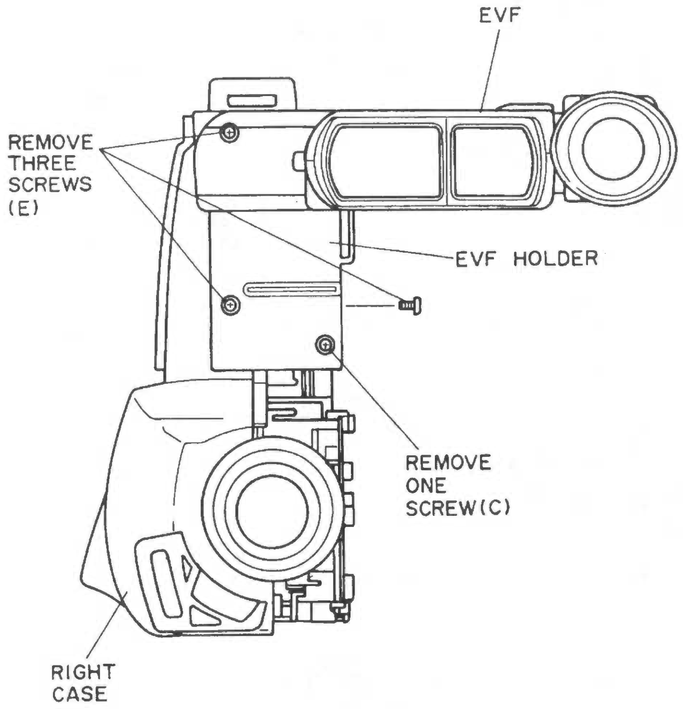

Fig. 2 - Left Case/Electronic Viewfinder (EVF) Removal

A/V Jack Cover/Power Switch Knob Removal (Fig. 3)

1. Remove the left case.
2. Remove one (1) screw holding the A/V jack cover and remove the jack cover from the left case.
3. Release two (2) tabs and remove the power switch knob from the left case.

Note: When the power switch knob is removed, the spring between the power switch slider and the knob holder will fall out. Take care not to lose the spring.

Camera Block/Tripod Mount/VCR Block/Right Case Removal (Fig. 4)

1. Remove the cassette lid, the left case and the EVF.

Note: It is not necessary to remove the cassette lid and the EVF when removing only the VCR block.

2. Disconnect one (1) flat (ribbon) cable on the Main circuit board.
3. Remove three (3) screws holding the camera block.
4. Lift out the camera block from the right case.
5. Disconnect one (1) connector on the Sensor/Process circuit board.
6. Remove one (1) screw holding the right case and the VCR block (bottom side).
7. Release one (1) tab and remove the tripod mount from the right case.
8. Remove two (2) screws holding the VCR block to the right case.
9. Lift out the VCR block from the right case.

INSTRUMENT DISASSEMBLY (Continued)

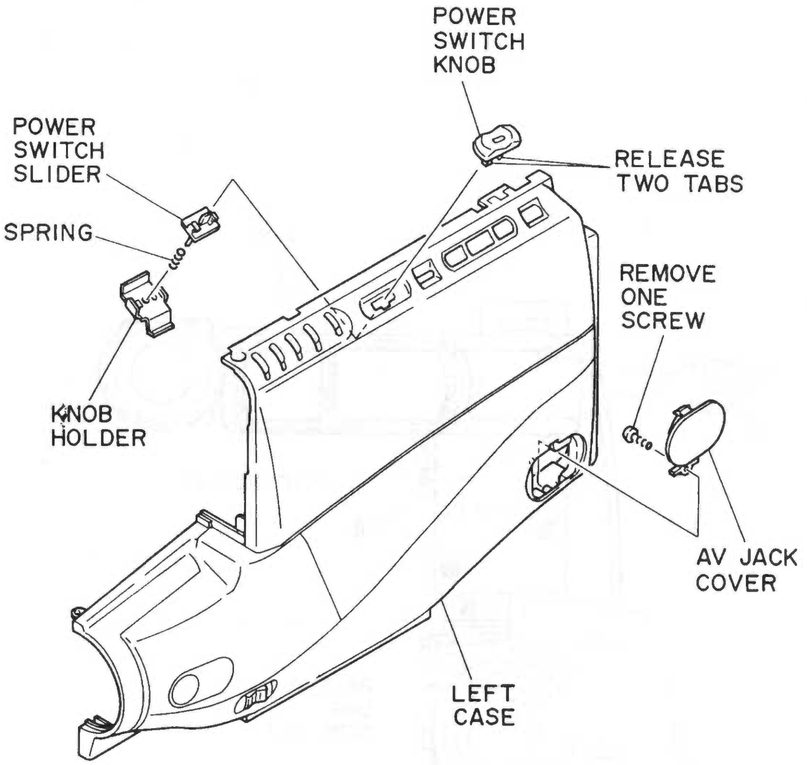
POWER SWITCH KNOB
POWER SWITCH SLIDER
RELEASE TWO TABS
SPRING
REMOVE ONE SCREW
KNOB HOLDER
AV JACK COVER
LEFT CASE

Fig. 3 - A/V Jack Cover/Power Switch Knob Removal

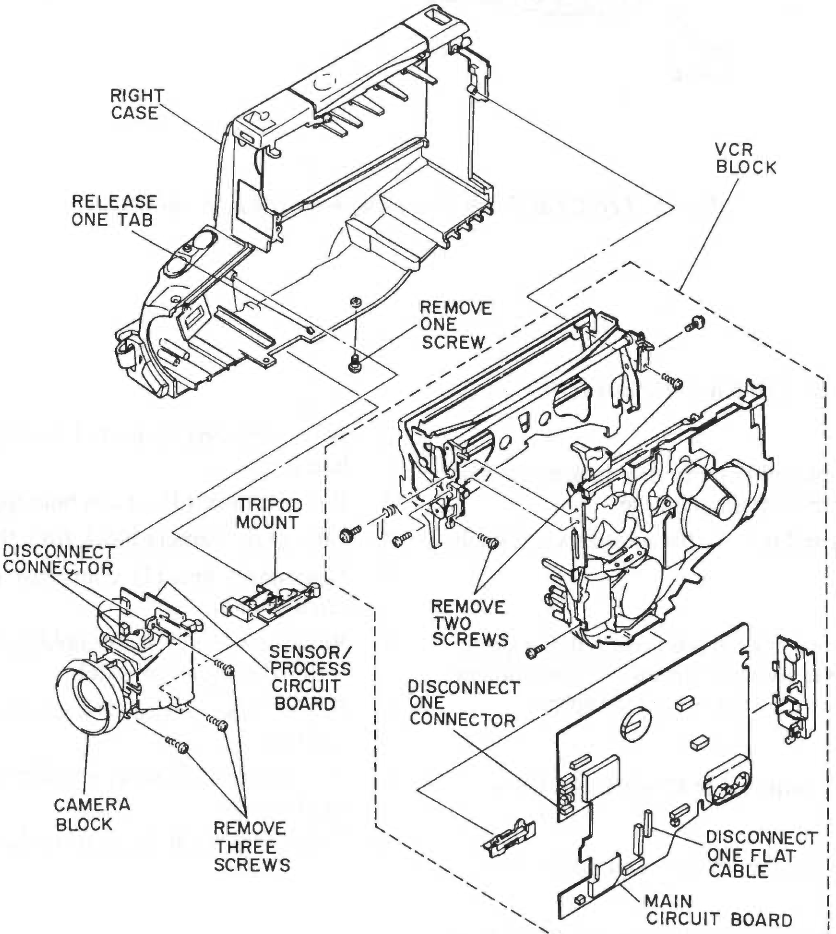
RIGHT CASE
VCR BLOCK
RELEASE ONE TAB
REMOVE ONE SCREW
TRIPOD MOUNT
DISCONNECT CONNECTOR
REMOVE TWO SCREWS
SENSOR/ PROCESS CIRCUIT BOARD
DISCONNECT ONE CONNECTOR
CAMERA BLOCK
REMOVE THREE SCREWS
DISCONNECT ONE FLAT CABLE
MAIN CIRCUIT BOARD

Fig. 4 - Camera Block/Tripod Mount/VCR Block/Right Case Removal

INSTRUMENT DISASSEMBLY (Continued)

Handle/Zoom Switch/Hand Strap Removal (Fig. 5)

1. Remove the left case and camera block.
2. Remove two (2) screws holding the handle holder-F.
3. Remove the handle holder-F in the direction of arrow (A).
4. Remove one (1) screw holding the handle holder-R.
5. Remove the handle holder-R in the direction of arrow (B).
6. Release four (4) tabs holding the zoom switch.
7. Remove two (2) screws holding the hand strap.
8. Remove the hand strap from the right case.

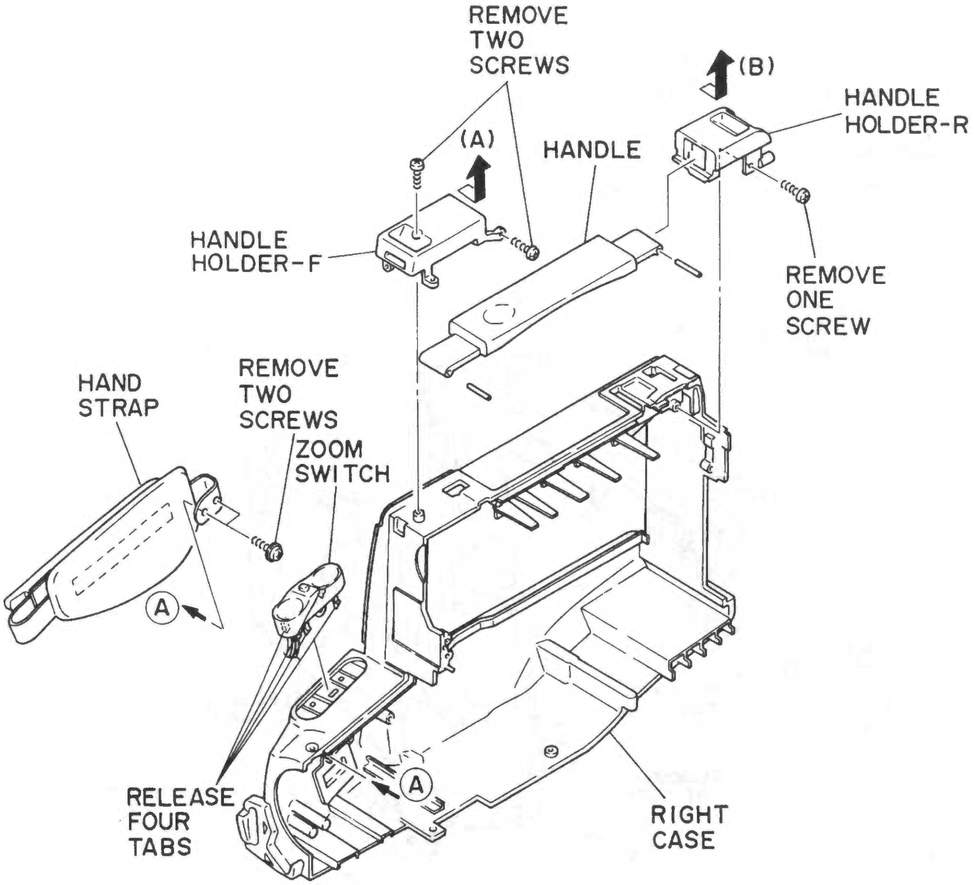
REMOVE TWO SCREWS
(B)
HANDLE HOLDER-R
(A)
HANDLE
HANDLE HOLDER-F
REMOVE ONE SCREW
HAND STRAP
REMOVE TWO SCREWS
ZOOM SWITCH
A
A
RELEASE FOUR TABS
RIGHT CASE

Fig. 5 - Handle/Zoom Switch/Hand Strap Removal

INSTRUMENT DISASSEMBLY (Continued)

Main Circuit Board/Tape Transport Mechanism Removal (Fig. 6)

1. Remove the cassette lid, the left case, the EVF, the camera block, the tripod mount, the VCR block and the right case.
2. Remove one (1) screw holding the ground cable.
3. Disconnect four (4) connectors on (A) the Main circuit board.
4. Disconnect four (4) connectors (B) on the Main circuit board.
5. Disconnect one (1) connector (C) on the Main circuit board.
6. Disconnect two (2) flat (ribbon) cables on the Main circuit board.
7. Release two (2) tabs (A) holding the Main circuit board and open the Main circuit board in the direction of the arrow.
8. Release two (2) tabs (B) on the Main circuit board holder and remove the circuit board.

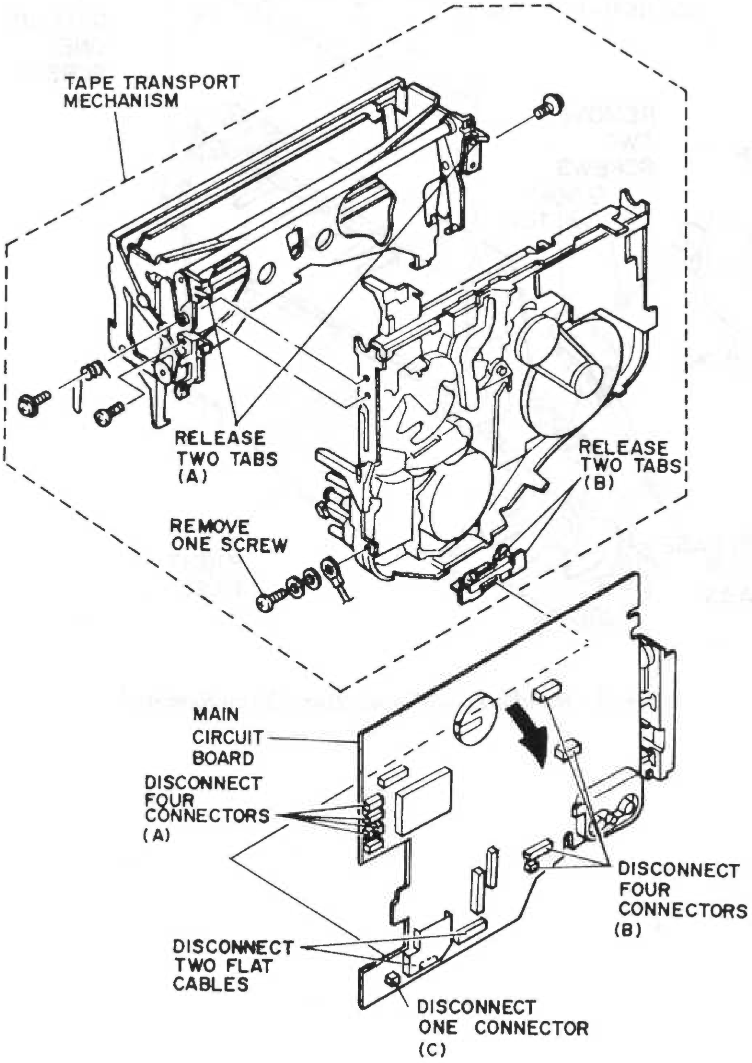
TAPE TRANSPORT MECHANISM
RELEASE TWO TABS (A)
RELEASE TWO TABS (B)
REMOVE ONE SCREW
MAIN CIRCUIT BOARD
DISCONNECT FOUR CONNECTORS (A)
DISCONNECT FOUR CONNECTORS (B)
DISCONNECT TWO FLAT CABLES
DISCONNECT ONE CONNECTOR (C)

Fig. 6 - Main Circuit Board/Tape Transport Mechanism Removal

INSTRUMENT DISASSEMBLY (Continued)

Control Circuit Board/Hood Holder/Lens Block/CCD Image Sensor/Sensor/Process Circuit Board Removal (Fig. 7)

1. Remove the lens hood, the left case and the camera block.
2. Disconnect one (1) connector on the Control Circuit board.
3. Release one (1) tab and remove the Control circuit board in the direction of the arrow.

Note: Remove the Control Circuit board before hood holder.

4. Release two (2) tabs and remove the hood holder.

Note: When the hood holder is removed, the rubber ring will fall off. Refer to the upper left section of Fig. 7 for rubber ring reinstallation.

5. Disconnect one (1) flat (ribbon) cable on the Sensor/Process circuit board.
6. Remove two (2) screws (A) holding the lens block and the sensor plate.
7. Remove two (2) screws (B) holding the lens block and camera frame.
8. Remove two (2) screws (C) holding the flat cable.

Note: When the lens block is removed, the crystal filter, the sensor rubber and the sensor guide falls out. Take care not to damage the crystal filter.

9. Unsolder sixteen (14) points (terminals of the CCD image sensor) on the Sensor/Process circuit board.
10. Remove two (2) screws (D) holding the Sensor/Process circuit board and sensor plate.

Note: Take care not to damage the CCD image sensor while disassembling the instrument.

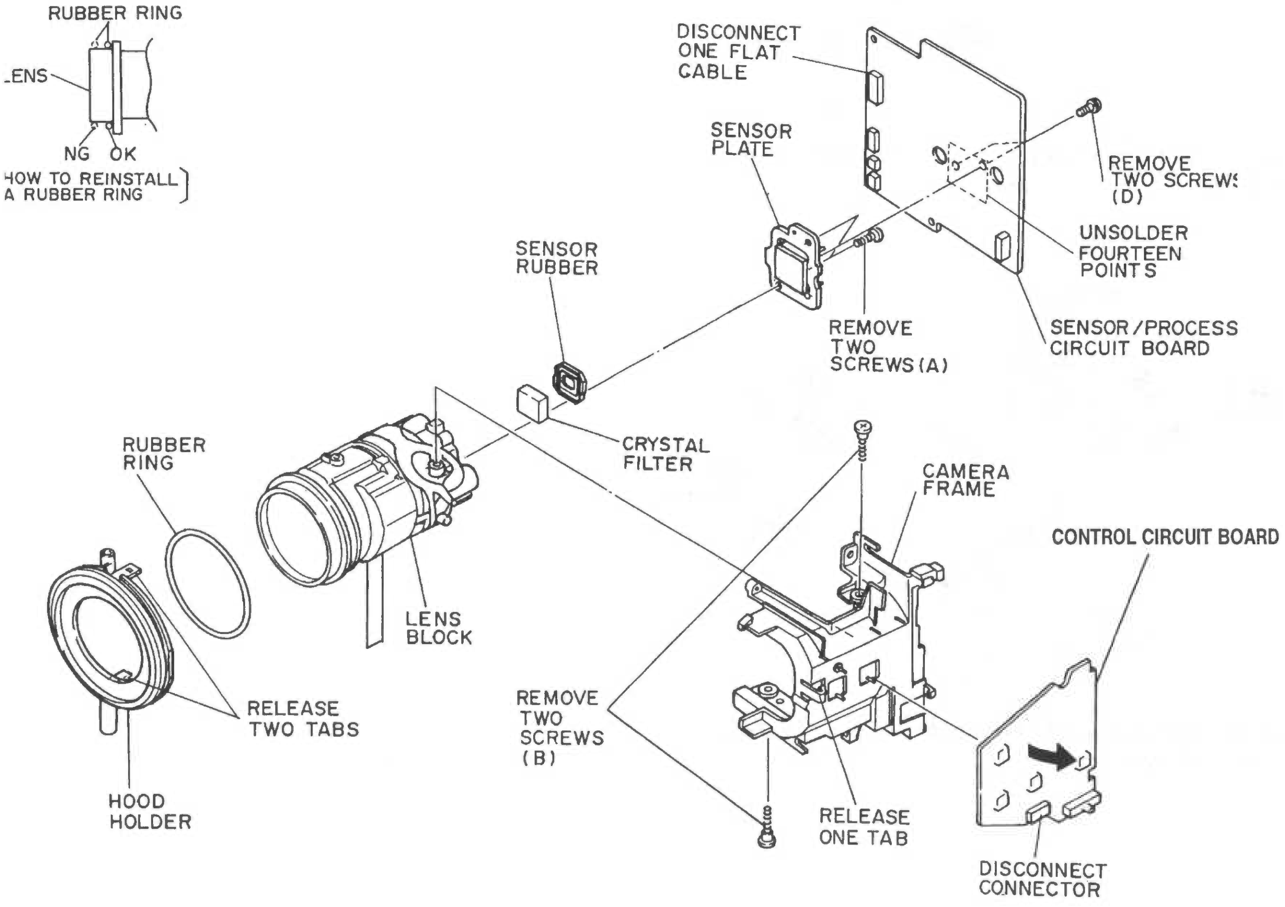
RUBBER RING
ENS
NG
OK
HOW TO REINSTALL A RUBBER RING
DISCONNECT ONE FLAT CABLE
SENSOR PLATE
REMOVE TWO SCREW
(D)
UNSOLDER FOURTEEN POINTS
SENSOR RUBBER
REMOVE TWO SCREWS (A)
SENSOR/PROCESS CIRCUIT BOARD
RUBBER RING
CRYSTAL FILTER
CAMERA FRAME
CONTROL CIRCUIT BOARD
LENS BLOCK
RELEASE TWO TABS
REMOVE TWO SCREWS (B)
HOOD HOLDER
RELEASE ONE TAB
DISCONNECT CONNECTOR

Fig. 7 - Control Circuit Board/Hood Holder/Lens Block/CCD Image Sensor/Sensor/Process Circuit Board Removal

INSTRUMENT DISASSEMBLY (Continued)

ELECTRONIC VIEWFINDER (EVF) BLOCK

Note: Remove the EVF block in advance.

EVF Holder/Cable Guide/Cable Holder Removal (Figs. 8-9)

1. Set the EVF to the position shown in figure 8.
2. Remove one (1) screw (A) holding the cable guide (Fig. 9).
3. Insert a small thin screwdriver into hole (B) in the EVF holder and then remove the EVF holder in the direction of arrow (Fig. 8).
4. Release two (2) tabs of the cable holder (Fig. 9).

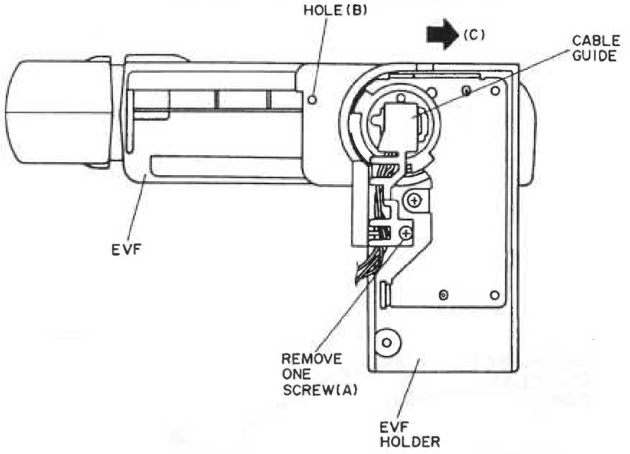
HOLE (B)
(C)
CABLE GUIDE
EVF
REMOVE ONE SCREW (A)
EVF HOLDER

Fig. 8 - EVF Holder, Cable Guide and Cable Holder Removal

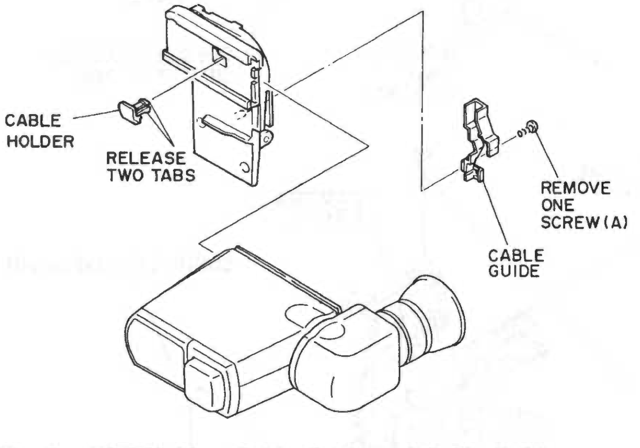
CABLE HOLDER
RELEASE TWO TABS
REMOVE ONE SCREW (A)
CABLE GUIDE

Fig. 9 - EVF Holder, Cable Guide and Cable Holder Removal (Continued)

INSTRUMENT DISASSEMBLY (Continued)

ELECTRONIC VIEWFINDER DISASSEMBLY

EVF Top Case/Light Cover Removal (Fig. 10)

1. Remove the EVF from the camcorder.
2. Release one (1) tab and remove the light cover.
3. Remove four (4) screws holding the EVF top and bottom cases.
4. Separate the EVF top case from the EVF bottom case.

EVF Neck Block Removal (Fig. 10)

1. Remove EVF top case, the EVF light cover.
2. Disconnect one (1) connector (A) on the EVF circuit board.
3. Remove the EVF neck block from the EVF bottom case.

Microphone Removal (Fig. 10)

1. Remove the EVF top case, the EVF light cover and the EVF neck block.
2. Disconnect one (1) connector (B) on the EVF circuit board.
3. Remove the microphone unit from the EVF bottom case.

Light Terminal Removal (Fig. 10)

1. Remove the EVF top case, the EVF light cover, the EVF neck block and the microphone.
2. Disconnect one (1) connector (C) on the EVF circuit board.
3. Pull out the cable holder form the EVF bottom case.
4. Pull out the light holder from the EVF bottom case.
5. Remove one (1) screw holding the light terminal.

ELECTRONIC VIEWFINDER (EVF)

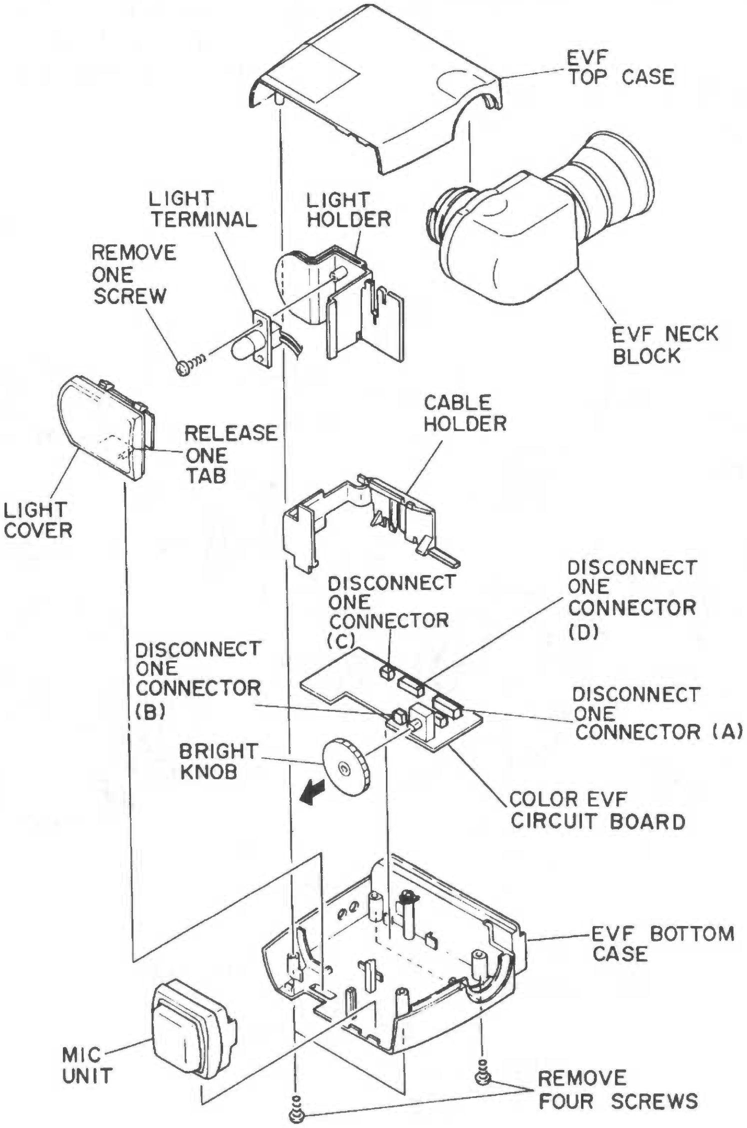
EVF TOP CASE
LIGHT TERMINAL
LIGHT HOLDER
REMOVE ONE SCREW
EVF NECK BLOCK
CABLE HOLDER
RELEASE ONE TAB
LIGHT COVER
DISCONNECT ONE CONNECTOR (C)
DISCONNECT ONE CONNECTOR (D)
DISCONNECT ONE CONNECTOR (B)
DISCONNECT ONE CONNECTOR (A)
BRIGHT KNOB
COLOR EVF CIRCUIT BOARD
EVF BOTTOM CASE
MIC UNIT
REMOVE FOUR SCREWS

Fig. 10 - EVF Top Case/Light Cover/EVF Neck Block/Microphone/Light Terminal/Video Process Circuit Board/EVF Bottom Case Removal

T.C. Corp
10 North Main St
Wharton NJ 07885
www.servicemanuals.net

Continued >

INSTRUMENT DISASSEMBLY (Continued)

ELECTRONIC VIEWFINDER DISASSEMBLY (Continued)

Video Process Circuit Board/Bottom Case Removal (Fig. 10)

1. Remove the EVF top case, the EVF light cover, the EVF neck block and the microphone, disconnect light terminal.
2. Disconnect one (1) connector (D) on the EVF circuit board.
3. Remove bright knob by pulling in direction of arrow.

LENS BLOCK DISASSEMBLY

EVF Lens Removal (Fig. 11)

1. Remove the light cover, EVF top case and EVF neck block.

Note: The EVF lens can be removed without removing the EVF block.

2. Turn the EVF eye cup in the direction of arrow.
3. Remove the EVF eye cup in the direction of arrow.

EVF Right Case/EVF Left Case Removal (Fig. 11)

1. Remove two (2) screw holding the EVF right and left cases.
2. Remove the EVF right case from the EVF left case.
3. Left out the LCD shield, LCD case and the LCD drive circuit board from the EVF left case.

LCD Drive Circuit Board/Back Light/LCD Unit and Case Removal (Fig. 11)

1. Remove the LCD holder and disconnect one (1) connector from the LCD drive.
2. Disconnect one (1) flat cable on the LCD drive circuit board.
3. Release three (3) tabs and remove the back light holder and back light from the LCD case.
4. Release two (2) tabs and remove the LCD holder and LCD unit from the LCD case.

Note: When the back light is removed from the back light holder, the diffusing sheet also comes out. Take care not to lose or damage the sheet.

LENS BLOCK

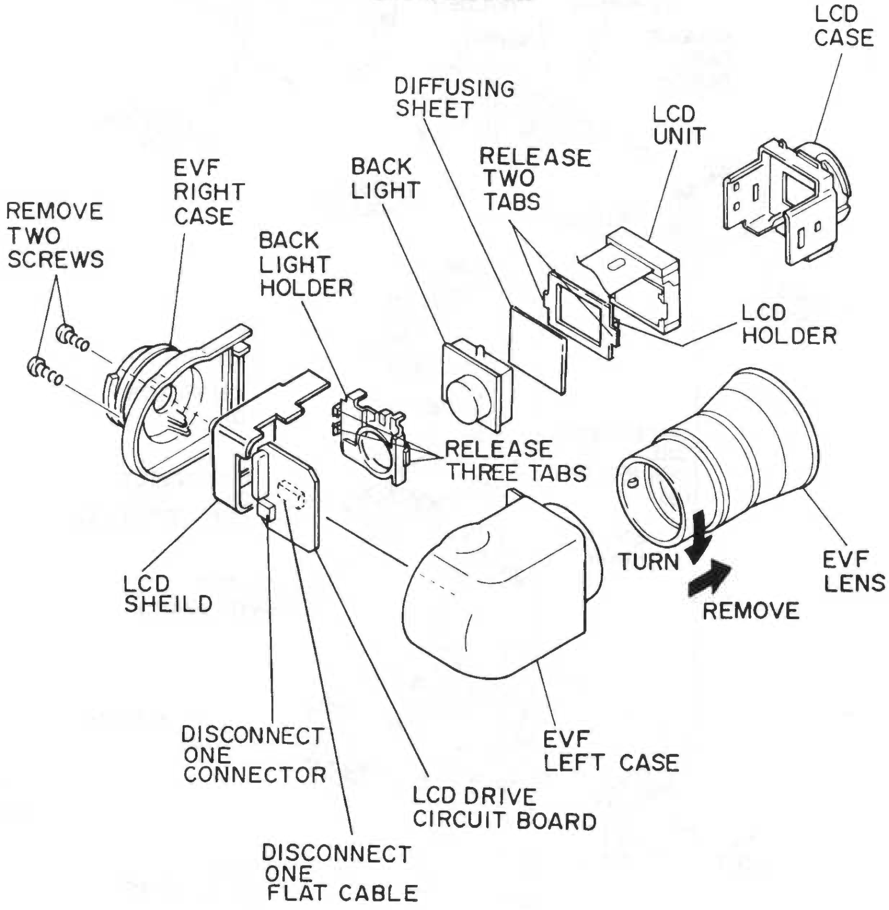
LCD CASE
DIFFUSING SHEET
LCD UNIT
RELEASE TWO TABS
BACK LIGHT
EVF RIGHT CASE
REMOVE TWO SCREWS
BACK LIGHT HOLDER
LCD HOLDER
RELEASE THREE TABS
TURN
EVF LENS
REMOVE
LCD SHEILD
DISCONNECT ONE CONNECTOR
EVF LEFT CASE
LCD DRIVE CIRCUIT BOARD
DISCONNECT ONE FLAT CABLE

Fig. 11 - EVF Lens/EVF Right Case/EVF Left Case/LCD Drive Circuit Board/ Back Light/LCD Unit/LCD Case Removal

MECHANISM DISASSEMBLY

(Top View)

1. Static Discharge Brush
2. Upper Cylinder
3. Guide Roller Rail
4. X-value Adjust Nut
5. Take-up Guide Roller
6. Audio/Control (A/C) Head
7. Take-up Guide Pole
8. Pressure Roller Assembly
9. Take-up Guide Arm
10. Take-up End Sensor
11. End Lamp
12. Take-up Reel Table
13. Cassette Holder Lock Slider
14. Reel Gear Block
15. Supply Reel Table
16. Tension Band
17. Tension Arm
18. Supply Guide Roller
19. Supply End Sensor
20. Supply Guide Post
21. Supply Guide Pole
22. Full Erase (FE) Head

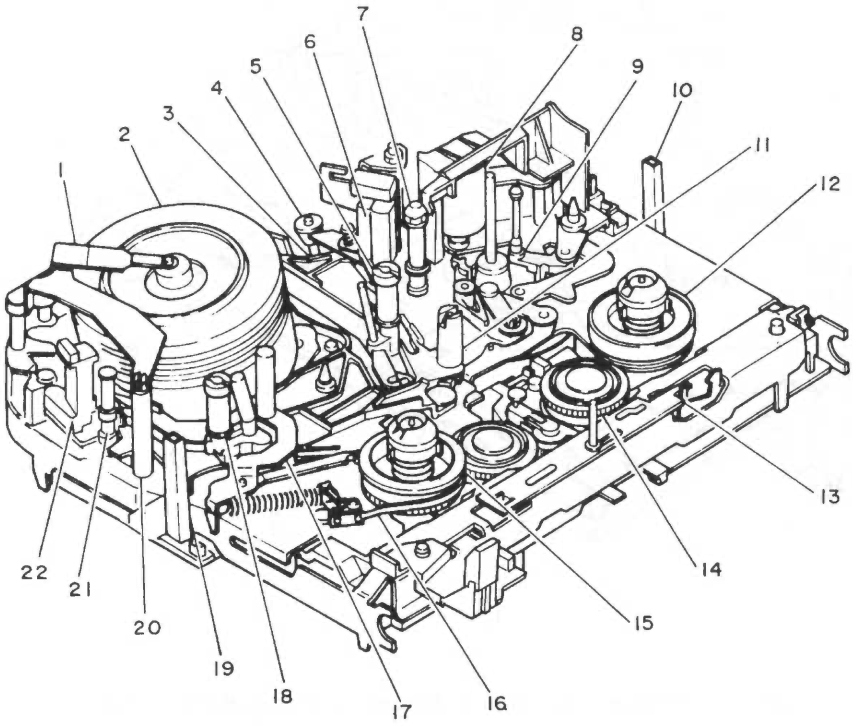

Fig. 12 - Transport Mechanism Identification (Top View)

MECHANISM DISASSEMBLY (Continued)

(Bottom View)

1. Lower Cylinder
2. Supply Loading Cam Gear
3. Loading Motor
4. Tension Pole Drive Arm
5. Mechanism State Switch
6. Supply Sensor CBA
7. Loading Gear
8. Driving Gear
9. Take-up Sensor CBA
10. Capstan Motor
11. Take-up Loading Cam Gear

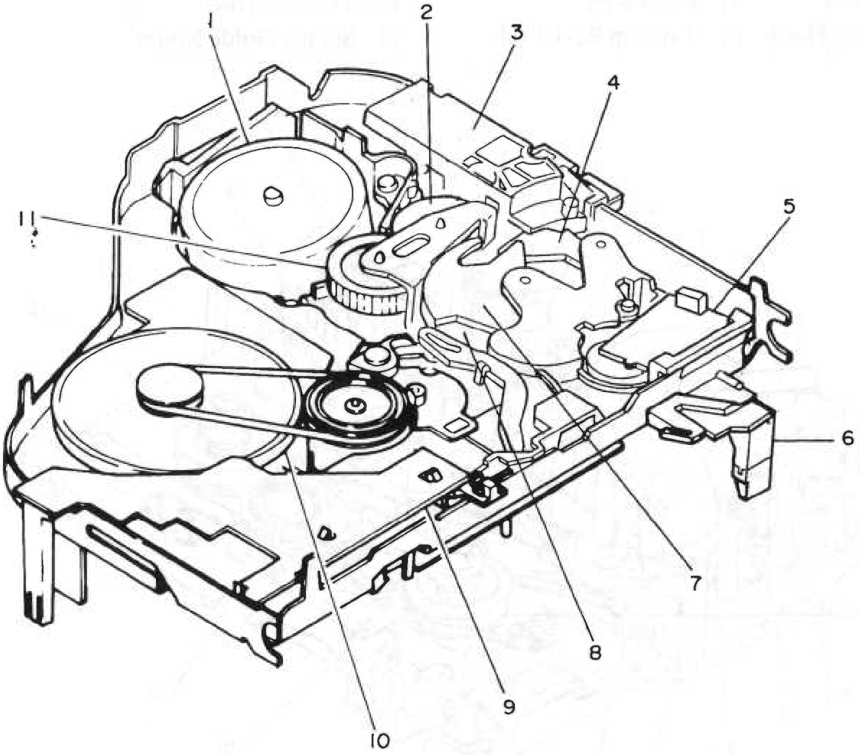

Fig. 13 - Transport Mechanism Identification (Top Bottom View)

MECHANISM DISASSEMBLY (Continued)

Before performing the mechanism disassembly procedures, remove the tape transport mechanism from the camcorder. Refer to the "Instrument Disassembly Section" in this service publication for detailed instructions on removing the transport mechanism. Perform all procedures in the "Mechanism Disassembly Section" in the order presented. Reinstall all parts in the reverse order unless special instructions are provided.

Cassette Holder/Supply Sensor Circuit Board Removal (Figs. 14, 15, 16, 17)

1. Remove one (1) screw holding the Supply Sensor circuit board (Fig. 14).
2. Release one (1) tab and lift up the cassette holder (Fig. 18).
3. Remove the Supply Sensor circuit board in the direction of the arrow (Fig. 14).
4. Remove two (2) screws holding the cassette holder and the cassette holder spring (Fig. 16).
5. Remove one (1) screw holding the cassette holder and the chassis holder (Fig.17).
6. Move the front arm of the cassette holder in the direction of arrow (A) and move the rear of the cassette holder in the direction of arrow (B) to remove the cassette holder from the transport mechanism.

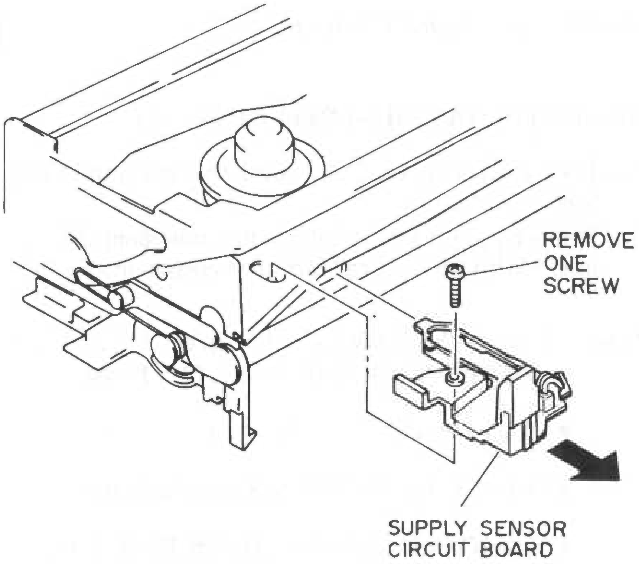
REMOVE ONE SCREW
SUPPLY SENSOR CIRCUIT BOARD

Fig. 14 - Cassette Holder/Supply Sensor Circuit Board Removal

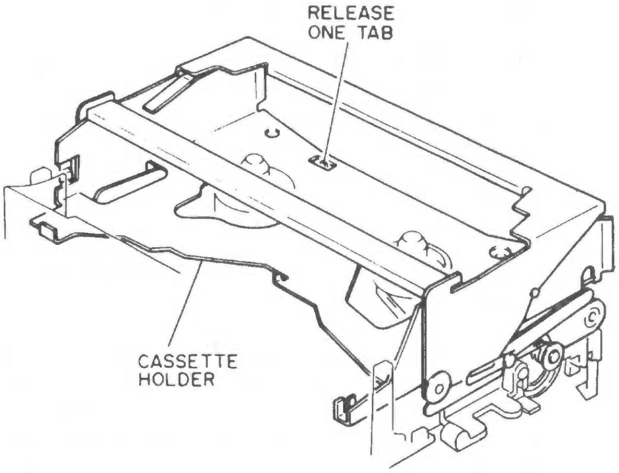
RELEASE ONE TAB
CASSETTE HOLDER

Fig. 15 - Cassette Holder/Supply Sensor Circuit Board Removal

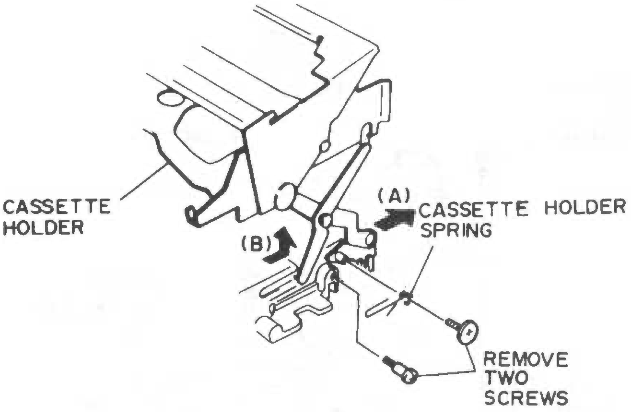
CASSETTE HOLDER
(A)
CASSETTE HOLDER SPRING
(B)
REMOVE TWO SCREWS

Fig. 16 - Cassette Holder/Supply Sensor Circuit Board Removal

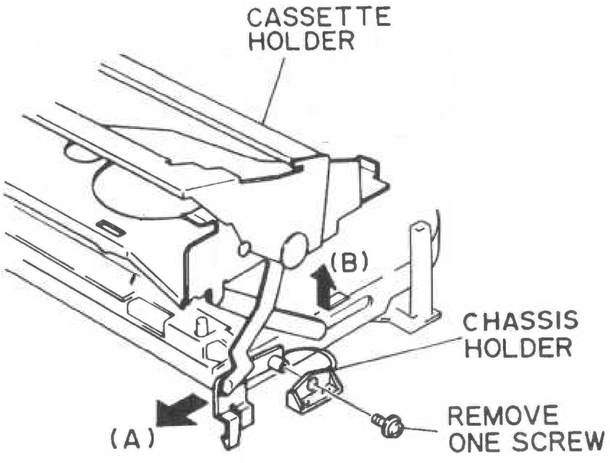
CASSETTE HOLDER
(B)
CHASSIS HOLDER
REMOVE ONE SCREW
(A)

Fig. 17 - Cassette Holder/Supply Sensor Circuit Board Removal

MECHANISM DISASSEMBLY (Continued)

Upper Cylinder Removal (Figs. 18, 19)

1. Remove one (1) screw holding the static discharge brush and the cylinder shield (Fig. 18).
2. Remove two (2) screws holding the upper cylinder.
3. Gently pull up on the upper cylinder to separate it from the lower cylinder (Fig. 19).

Note:
- Take care when removing the upper cylinder not to touch the video heads.
- When reinstalling, align the video head tip connected to the blue mark of the upper cylinder with the arrow mark on the lower cylinder (Fig. 19). Tighten the two (2) screws alternately until secure (Fig. 18).
- Install the upper cylinder by the reverse order of disassembly.
- After completing the reinstallation process, perform the following adjustment procedures.
  a. Audio/Control Head Horizontal Position Adjustment.
  b. PG Shifter Adjustment

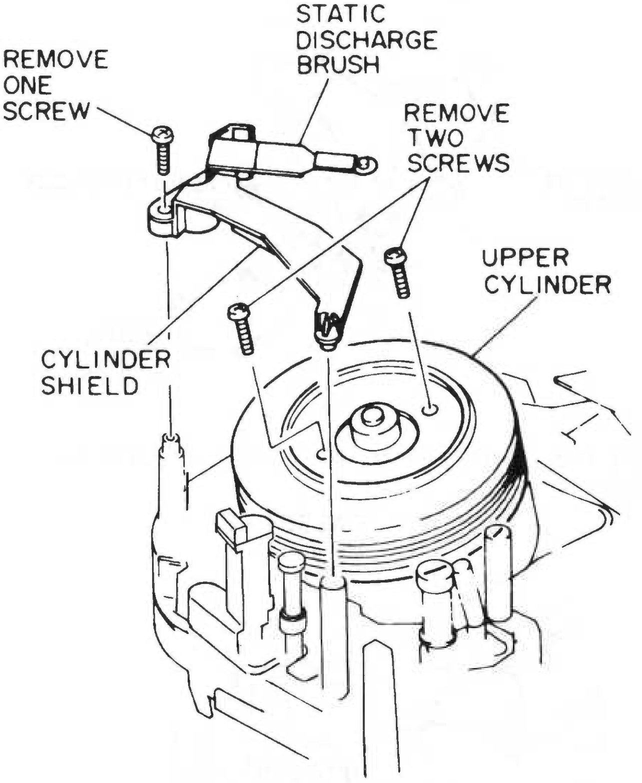
STATIC DISCHARGE BRUSH
REMOVE ONE SCREW
REMOVE TWO SCREWS
UPPER CYLINDER
CYLINDER SHIELD

Fig. 18 - Upper Cylinder Removal

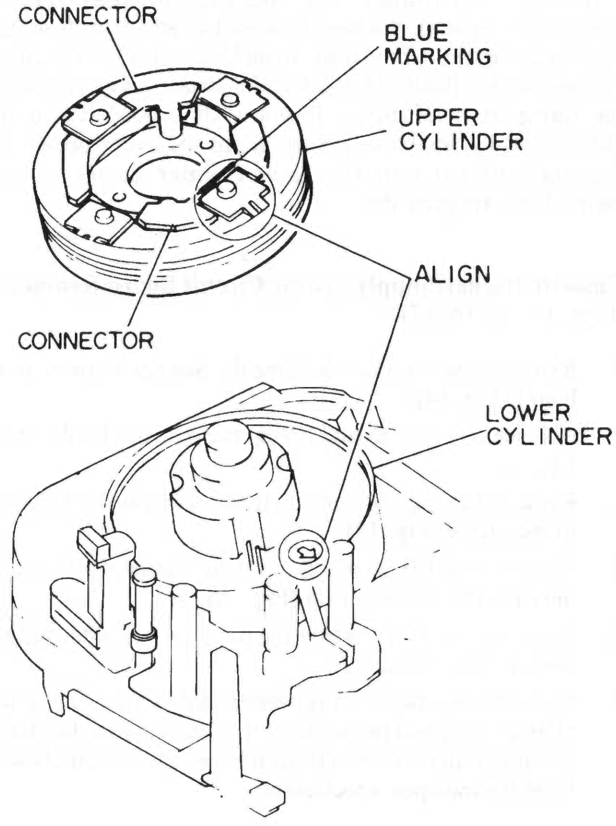
CONNECTOR
BLUE MARKING
UPPER CYLINDER
ALIGN
CONNECTOR
LOWER CYLINDER

Fig. 19 - Upper Cylinder Removal

Audio/Control (A/C) Head Removal (Fig. 20)

1. Disconnect one (1) connector on the audio/control (A/C) head.
2. Remove two (2) screws holding the audio/control (A/C) head and lift the A/C head from the transport mechanism.

Note: Perform the following "Mechanical Adjustments" after replacing the audio/control (A/C) head.

- Interchangeability Confirmation
- Audio/Control (A/C) Head Rough Adjustment
- Audio/Control (A/C) Head Height/Tilt/Azimuth Adjustment
- Audio/Control (A/C) Head Horizontal Position Adjustment

MECHANISM DISASSEMBLY (Continued)

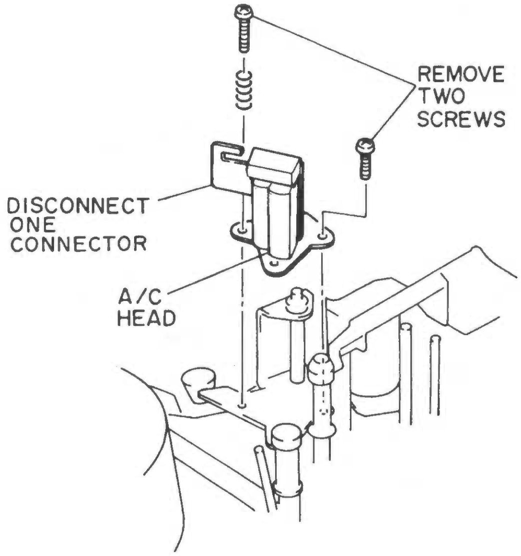
REMOVE TWO SCREWS
DISCONNECT ONE CONNECTOR
A/C HEAD

Fig. 20 - Audio/Control (A/C) Head Removal

Full Erase (FE) Head Removal (Fig. 21)

1. Disconnect one (1) connector on the FE head.
2. Remove one (1) screw holding the FE head.
3. Lift the FE head from the transport mechanism.

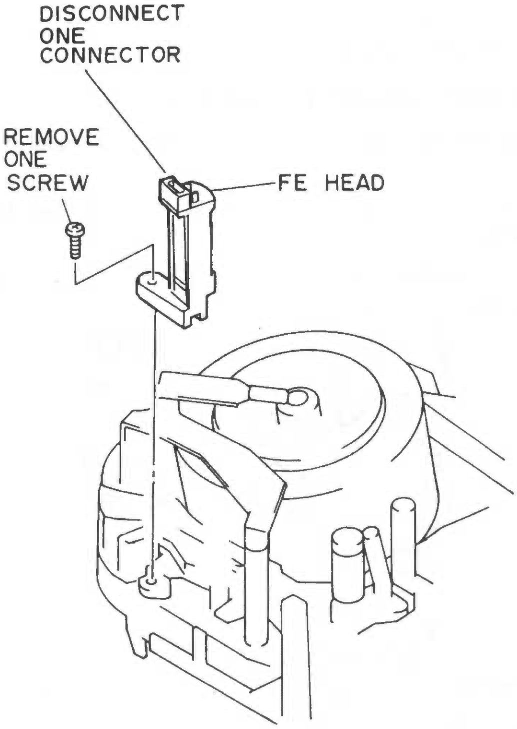
DISCONNECT ONE CONNECTOR
REMOVE ONE SCREW
FE HEAD

Fig. 21 - Full Erase (FE) Head Removal

Supply End Sensor and Loading Motor Removal (Fig. 22)

1. Remove (1) screw (A) holding the supply end sensor.
2. Release one (1) tabs (A) of the supply end sensor.
3. Remove the supply end sensor.
4. Remove one (1) screw (B) holding the motor holder.
5. Remove one (1) tab (B) of the motor holder.
6. Remove the motor holder.
7. Release three (3) tabs (C) holding the loading motor.

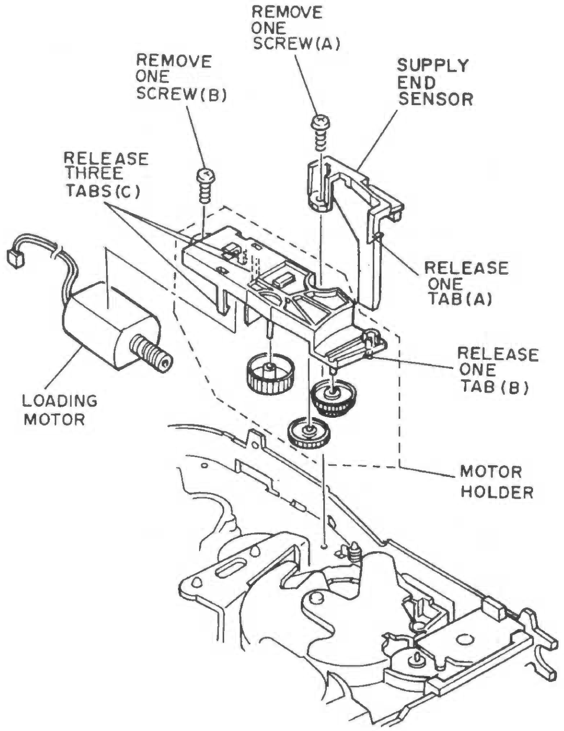
REMOVE ONE SCREW(A)
REMOVE ONE SCREW(B)
SUPPLY END SENSOR
RELEASE THREE TABS(C)
RELEASE ONE TAB(A)
RELEASE ONE TAB (B)
LOADING MOTOR
MOTOR HOLDER

Fig. 22 - Supply End Sensor and Loading Motor Removal

Take-up Sensor Circuit Board (Take-up Reel Sensor/ Take-up End Sensor/Cassette Holder Switch) Removal (Fig. 23)

1. Remove two (2) screws holding the Take-up Sensor circuit board.
2. Release three (3) tabs and remove the Take-up Sensor circuit board.

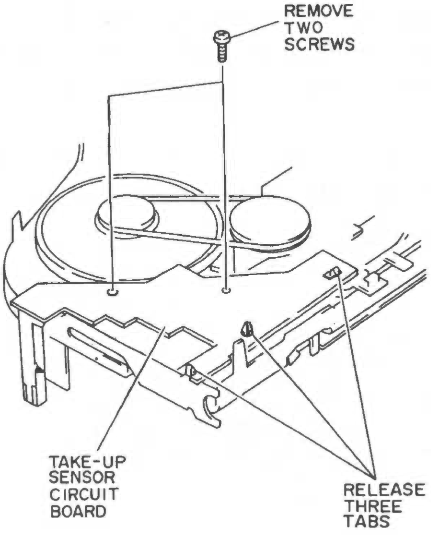
REMOVE TWO SCREWS
TAKE-UP SENSOR CIRCUIT BOARD
RELEASE THREE TABS

Fig. 23 - Take-up Sensor Circuit Board (Take-up Reel Sensor/Take-up End Sensor/Cassette Holder Switch) Removal

MECHANISM DISASSEMBLY (Continued)

Lower Cylinder Removal (Fig. 24)

1. Remove the upper cylinder.
2. Remove three (3) screws holding the lower cylinder and lift the lower cylinder from the transport mechanism.

Note: After reinstallation, perform the required adjustments/confirmations described in the "Upper Cylinder Removal Procedure".

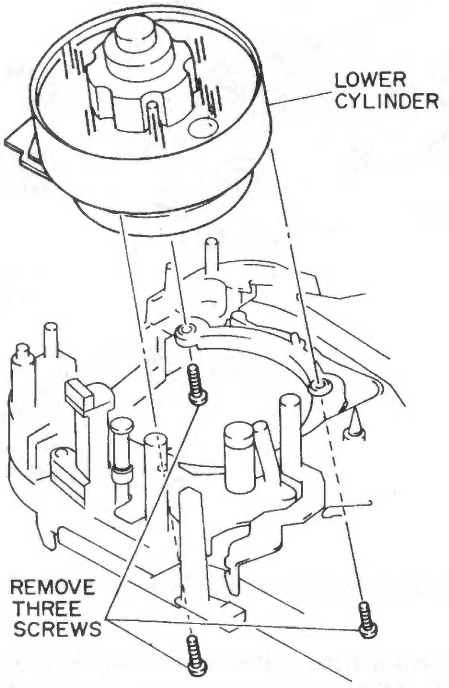
LOWER CYLINDER
REMOVE THREE SCREWS

Fig. 24 - Lower Cylinder Removal

Capstan Motor Removal (Figs. 25, 26)

1. Move the take-up guide arm in the direction of the arrow (pressure roller side) as shown in Fig. 25.
2. Remove three (3) screws holding the capstan motor.
3. Disconnect one (1) connector on the capstan motor (Fig. 26).
4. Remove the capstan belt from the capstan motor.
5. Lift the capstan motor from the chassis.

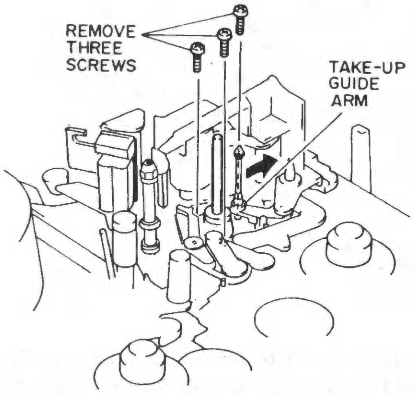
REMOVE THREE SCREWS
TAKE-UP GUIDE ARM

Fig. 25 - Capstan Motor Removal

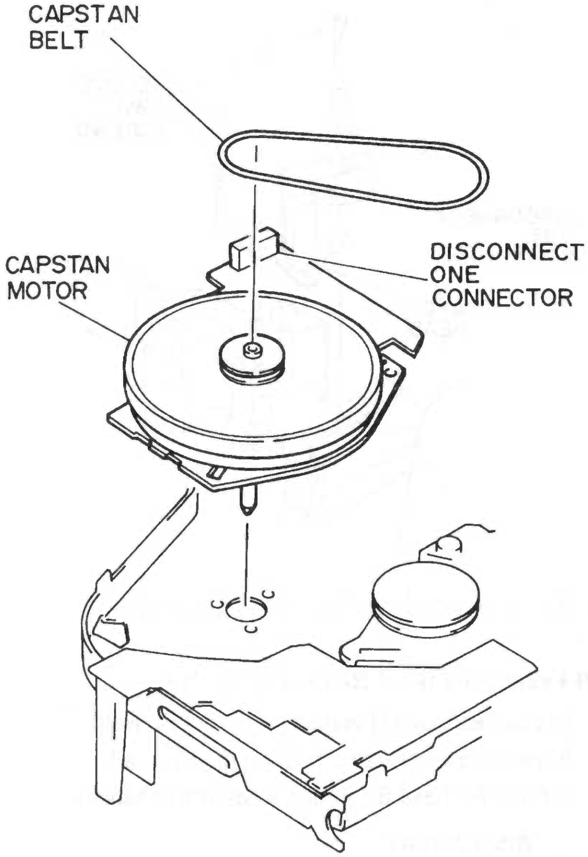
CAPSTAN BELT
CAPSTAN MOTOR
DISCONNECT ONE CONNECTOR

Fig. 26 - Capstan Motor Removal

Pressure Roller Assembly Removal (Fig. 27)

1. Remove the cassette holder and the Supply Sensor circuit board.
2. Remove two (2) screws holding the pressure roller holder.
3. Lift out the pressure roller assembly from the transport mechanism.

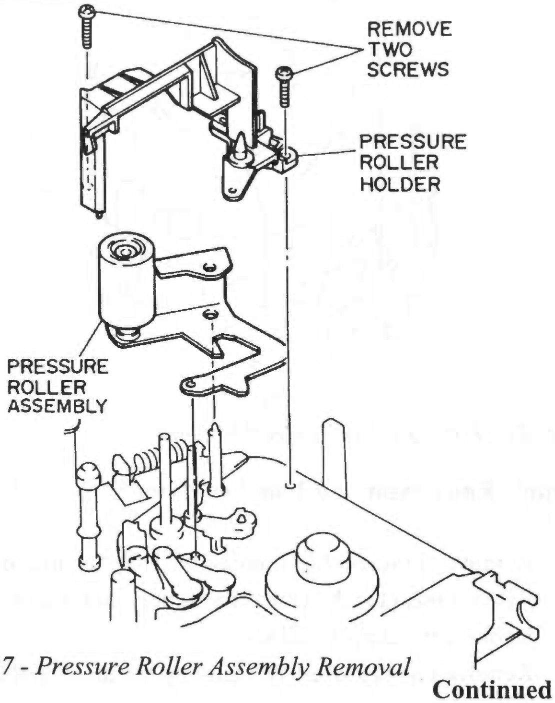
REMOVE TWO SCREWS
PRESSURE ROLLER HOLDER
PRESSURE ROLLER ASSEMBLY

Fig. 27 - Pressure Roller Assembly Removal

Continued >

MECHANISM DISASSEMBLY (Continued)

Tension Arm/Tension Band Removal (Fig. 28)

1. Remove the cassette holder and the Supply Sensor circuit board.
2. Release one (1) tab on the supply end sensor.
3. Release the tension spring.
4. Remove one (1) screw holding the tension band.
5. Move the supply sub brake in the direction of the arrow.
6. Remove the tension arm and the tension band from the transport mechanism chassis.
7. Release one (1) tab and remove the tension band from the tension arm.

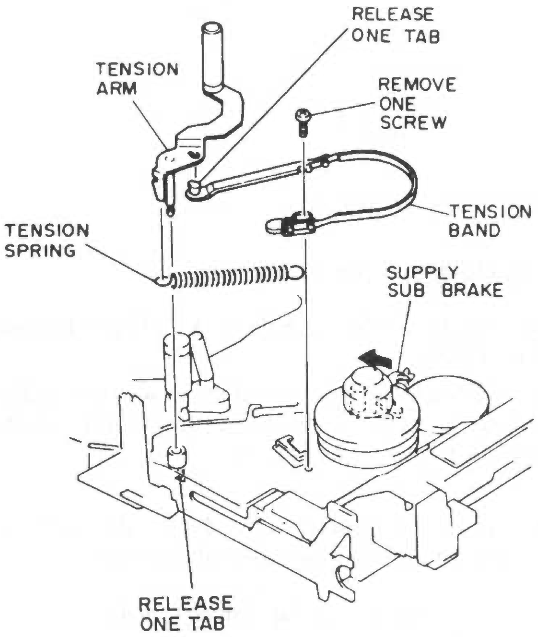
RELEASE ONE TAB
TENSION ARM
REMOVE ONE SCREW
TENSION BAND
TENSION SPRING
SUPPLY SUB BRAKE
RELEASE ONE TAB

Fig. 28 - Tension Arm/Tension Band Removal

Supply Reel Table Removal (Fig. 29)

1. Remove the cassette holder, the Supply Sensor circuit board, the tension arm and the tension band.
2. Remove one (1) washer holding the supply reel table.
3. Move the supply sub brake in the direction of the arrow and lift the supply reel table from the shaft.
4. Move the supply sub brake in the direction of the arrow.
5. Left out the supply reel table from the transport mechanism chassis.

Note: • Take care not to lose the washer under the reel table.

• After reinstalling, perform the "Supply/Take-up Reel Table Height Adjustment" in the "Mechanical Adjustment Section" of this service publication.

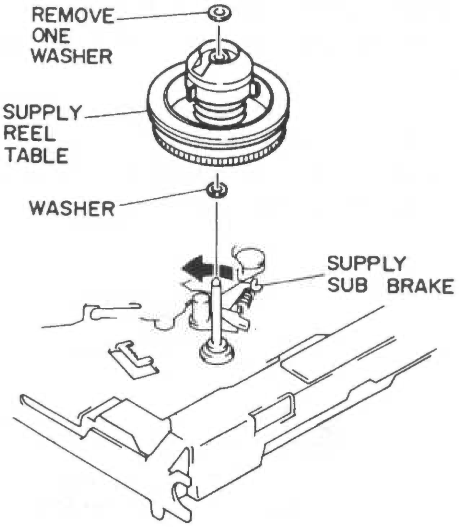
REMOVE ONE WASHER
SUPPLY REEL TABLE
WASHER
SUPPLY SUB BRAKE

Fig. 29 - Supply Reel Table Removal

Take-up Reel Table Removal (Fig. 30)

1. Remove the cassette holder, the Supply Sensor circuit board, the tension arm and the tension band.
2. Remove one (1) washer holding the take-up reel table.
3. Lift the take-up reel table from the shaft.

Note: • Take care not to lose the washer under the reel table.

• After reinstalling, perform the "Supply/Take-up Reel Table Height Adjustment" in the "Mechanical Adjustment Section" of this service publication.

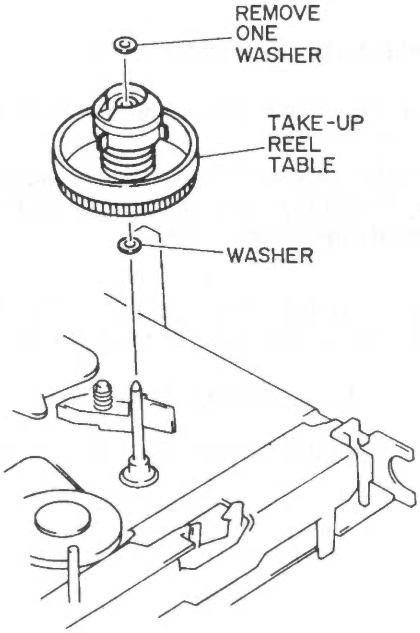
REMOVE ONE WASHER
TAKE-UP REEL TABLE
WASHER

Fig. 30 - Take-up Reel Table Removal

MECHANISM DISASSEMBLY (Continued)

Take-up Sub Brake Removal (Fig. 31)

1. Remove the cassette holder and the Supply Sensor circuit board.
2. Remove the spring between the transport mechanism chassis and the take-up sub brake.
3. Release one (1) tab and lift out the take-up sub brake from the transport mechanism chassis.

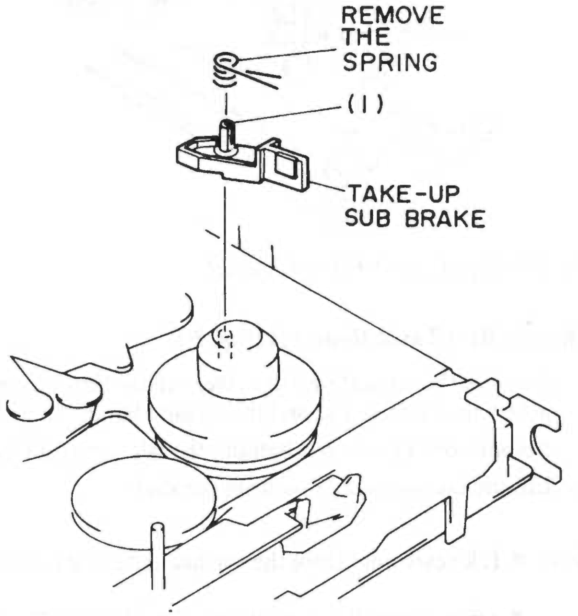
REMOVE THE SPRING
(1)
TAKE-UP SUB BRAKE

Fig. 31 - Take-up Sub Brake Removal

Supply Guide Roller Removal (Fig. 32)

1. Loosen one (1) hexagonal screw holding the supply guide roller.
2. Using a flat blade screwdriver, turn the upper section of the supply guide roller counterclockwise to remove it from the transport mechanism.

Note: After reinstalling, perform the following mechanical adjustments/confirmations.

- Creasing/Tape Slack Check
- Interchangeability Confirmation

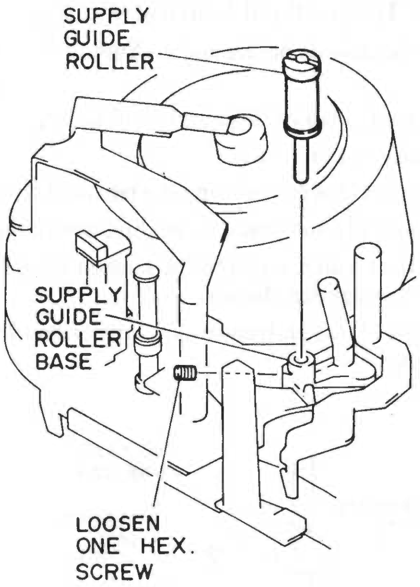
SUPPLY GUIDE ROLLER
SUPPLY GUIDE ROLLER BASE
LOOSEN ONE HEX. SCREW

Fig. 32 - Supply Guide Roller Removal

Take-up Guide Roller Removal (Fig. 33)

1. Loosen one (1) hexagonal screw holding the take-up guide roller.
2. Using a flat blade screwdriver, turn the upper section of the take-up guide roller counterclockwise to remove it from the transport mechanism.

Note: After reinstalling, perform the following mechanical adjustments/confirmations.

- Creasing/Tape Slack Check
- Interchangeability Confirmation

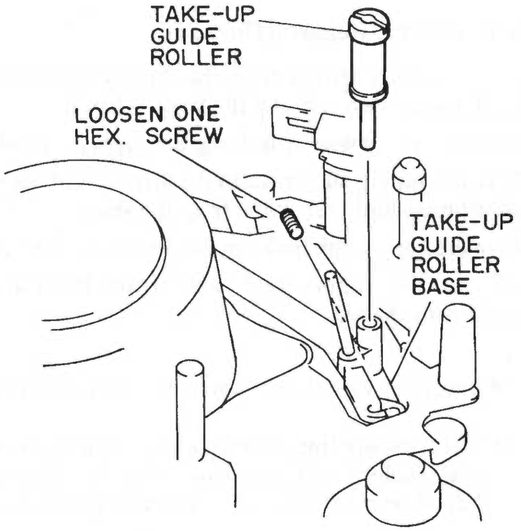
TAKE-UP GUIDE ROLLER
LOOSEN ONE HEX. SCREW
TAKE-UP GUIDE ROLLER BASE

Fig. 33 - Take-up Guide Roller Removal

MECHANISM DISASSEMBLY (Continued)

Audio/Control (A/C) Head Base Removal (Fig. 34)

1. Remove the audio/control (A/C) head.
2. Remove one (1) nut holding the audio/control (A/C) head base.
3. Lift out the audio/control (A/C) head base together with the spring.

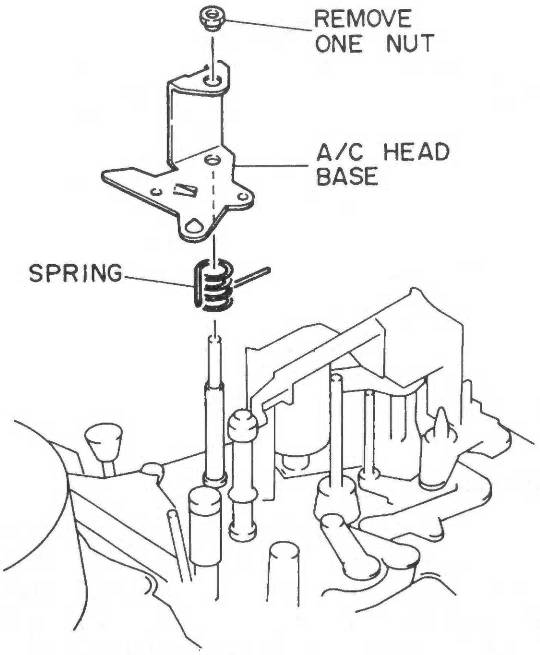
REMOVE ONE NUT
A/C HEAD BASE
SPRING

Fig. 34 - Audio/Control (A/C) Head Base Removal

Take-up Guide Pole Removal (Fig. 35)

1. Remove the cassette holder and supply sensor circuit board.
2. Remove the pressure roller assembly.
3. Release the spring between the take-up guide and chassis.

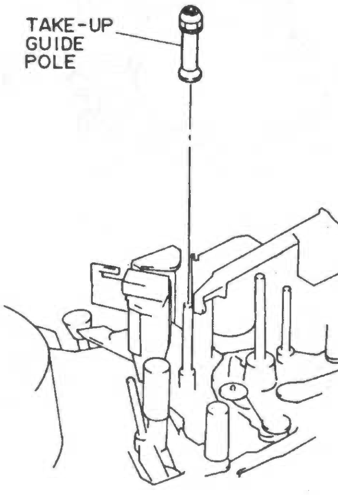
TAKE-UP GUIDE POLE

Fig. 35 - Take-up Guide Pole Removal

Supply Guide Roller Base/Take-up Guide Roller Base/ Guide Roller Rail/End Lamp Removal (Figs. 36, 37)

1. Remove the cassette holder, the Supply Sensor circuit board, the audio/control (A/C) head, the FE head, the tension arm, the tension band, the supply guide roller, the take-up guide roller, the audio/control (A/C) head base, the take-up guide pole, the half loading arm and the half loading control arm.
2. Remove one (1) screw holding the static discharge brush and the cylinder shield (Fig. 36).
3. Remove three (3) screws holding the cylinder assembly (Fig. 37).
4. Remove three (3) screws holding the guide roller rail (Fig. 36).
5. Release seven (7) tabs and remove the guide roller rail together with the supply guide roller base, the take-up guide roller base and the end lamp.
6. Remove the end lamp from the guide roller rail in the direction of the arrow.

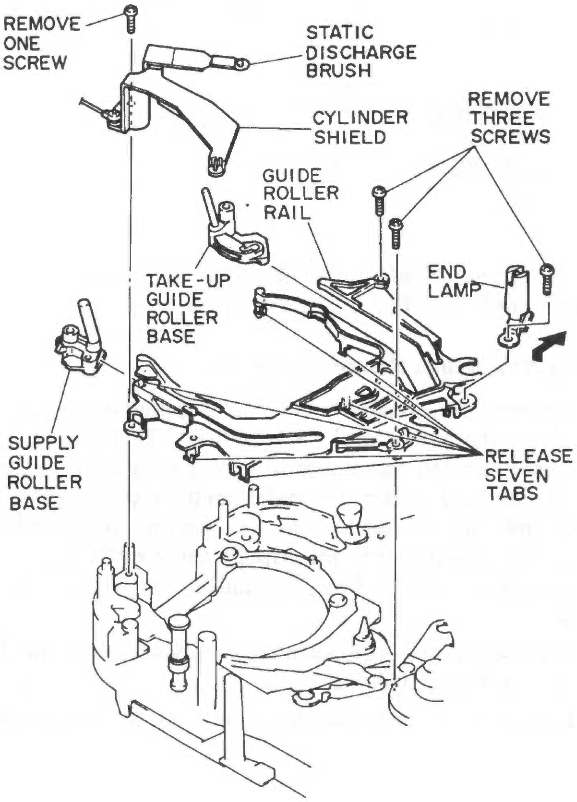
REMOVE ONE SCREW
STATIC DISCHARGE BRUSH
CYLINDER SHIELD
REMOVE THREE SCREWS
GUIDE ROLLER RAIL
TAKE-UP GUIDE ROLLER BASE
END LAMP
SUPPLY GUIDE ROLLER BASE
RELEASE SEVEN TABS

Fig. 36 - Supply Guide Roller Base/Take-up Guide Roller Base/Guide Roller Rail/End Lamp Removal

Continued >

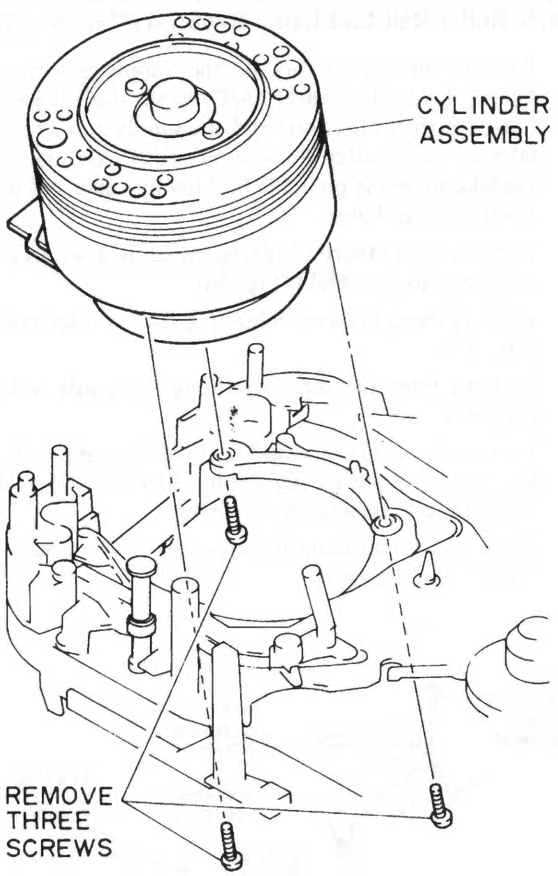

Fig. 37 - Supply Guide Roller Base/Take-up Guide Roller Base/Guide Roller Rail/End Lamp Removal

Supply Sub Brake Removal (Fig. 38)

1. Remove the cassette holder, the Supply Sensor circuit board, the audio/control (A/C) head, the FE head, the tension arm, the tension band, the supply guide roller, the take-up guide roller, the audio/control (A/C) head base, the take-up guide pole, the half loading arm, the half loading control arm, the supply guide roller base, the take-up guide roller base, the guide roller rail and the end lamp.
2. Release the spring between the supply sub brake and the transport mechanism chassis.
3. Lift the supply sub brake from the transport mechanism.

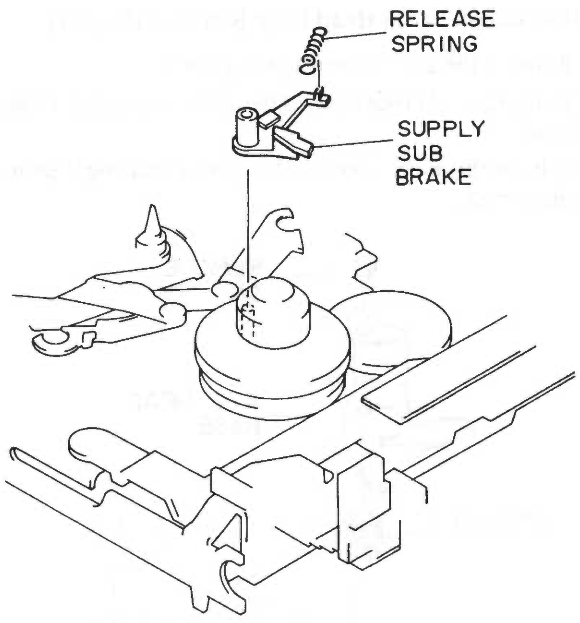

Fig. 38 - Supply Sub Brake Removal

Cylinder Base Removal (Fig. 39)

1. Remove the cassette holder, the Supply Sensor circuit board, the audio/control (A/C) head, the FE head, the tension arm, the tension band, the supply guide roller, the take-up guide roller, the audio/control (A/C) head base, the take-up guide pole, the half loading arm, the half loading control arm, the supply guide roller base, the take-up guide roller base, the guide roller rail and the end lamp.
2. Remove three (3) screws holding the cylinder base and lift out the cylinder base from the transport mechanism.

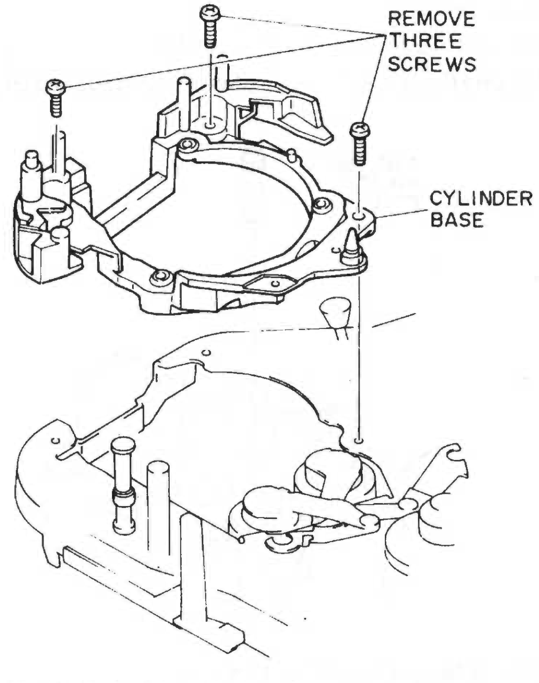

Fig. 39 - Cylinder Base Removal

MECHANISM DISASSEMBLY (Continued)

Supply Loading Cam Gear/Take-up Loading Cam Gear Removal (Fig. 40)

1. Remove the cassette holder, the Supply Sensor circuit board, the audio/control (A/C) head, the FE head, the tension arm, the tension band, the supply guide roller, the take-up guide roller, the audio/control (A/C) head base, the take-up guide pole, the half loading arm, the half loading control arm, the supply guide roller base, the take-up guide roller base, the guide roller rail, the end lamp and the cylinder base.
2. Lift out the supply loading cam gear and the take-up loading cam gear from the transport mechanism.

Note: After reinstalling, perform the "Loading Cam Gears Adjustment Procedure" in the "Mechanical Adjustment Section" of this service publication.

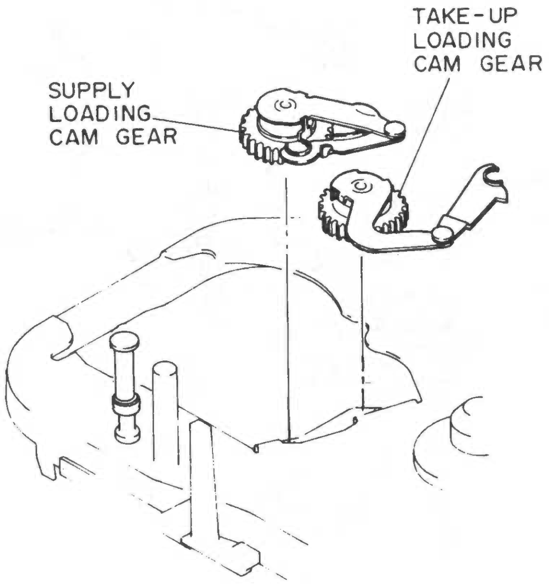

Fig. 40 - Supply Loading Cam Gear/Take-up Loading Cam Gear Removal

Take-up Guide Arm Removal (Fig. 41)

1. Remove the cassette holder, the Supply Sensor circuit board and the pressure roller assembly.
2. Release the spring between the take-up guide arm and the chassis.
3. Lift out the take-up guide arm from the transport mechanism.

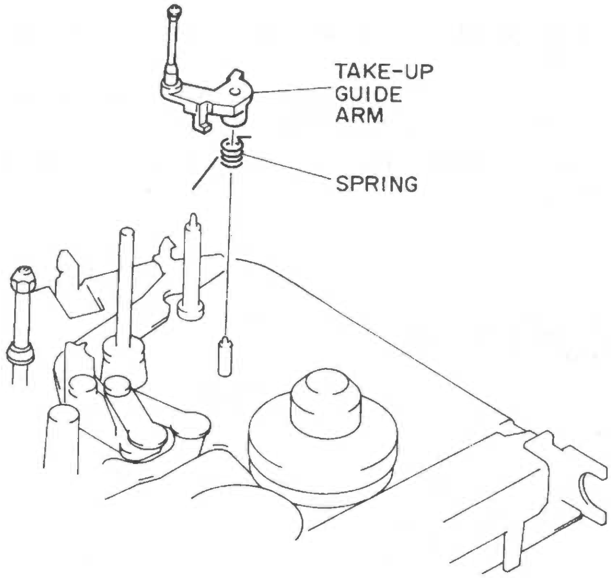

Fig. 41 - Take-up Guide Arm Removal

Pressure Roller Control Arm Removal (Fig. 42)

1. Remove the cassette holder, the Supply Sensor circuit board, the pressure roller assembly, the take-up guide pole, the half loading arm and the loading control arm.
2. Release the spring between the pressure roller control arm and the transport mechanism.
3. Lift out the pressure roller control arm from the transport mechanism.

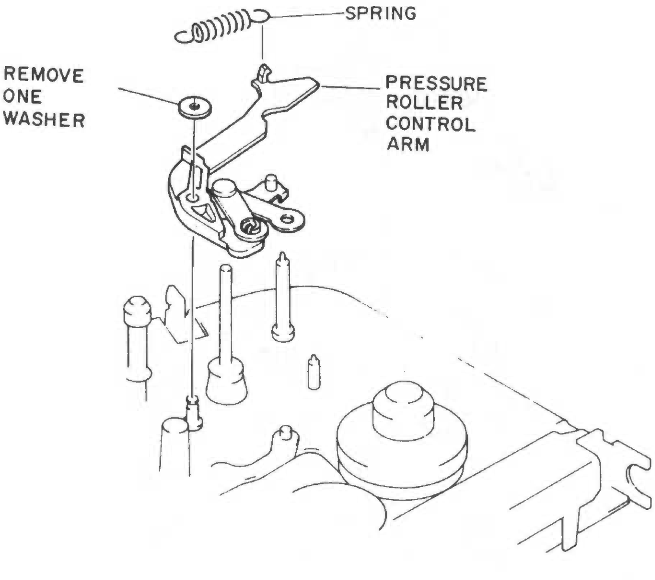

Fig. 42 - Pressure Roller Control Arm Removal

MECHANISM DISASSEMBLY (Continued)

Cassette Holder Lock Slider Removal (Fig 43)

1. Remove the cassette holder and the Supply Sensor circuit board.
2. Remove one (1) washer and release one (1) tab holding the cassette holder lock slider.
3. Lift the cassette holder lock slider from the transport mechanism.

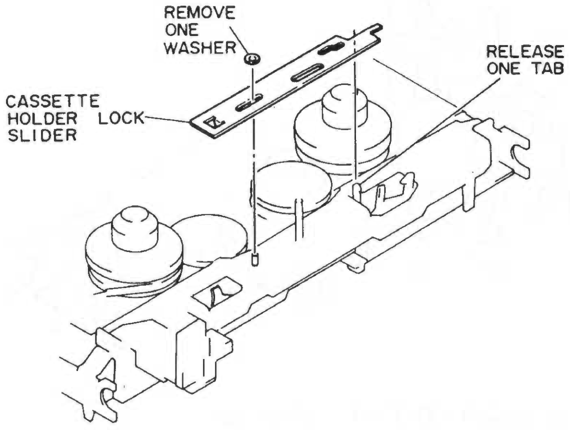
REMOVE ONE WASHER
RELEASE ONE TAB
CASSETTE HOLDER LOCK SLIDER

Fig. 43 - Cassette Holder Lock Slider Removal

Loading Gear Removal (Fig. 44)

1. Remove the Take-up Sensor circuit board and the reel gear block.
2. Pull out the loading gear from the transport mechanism.

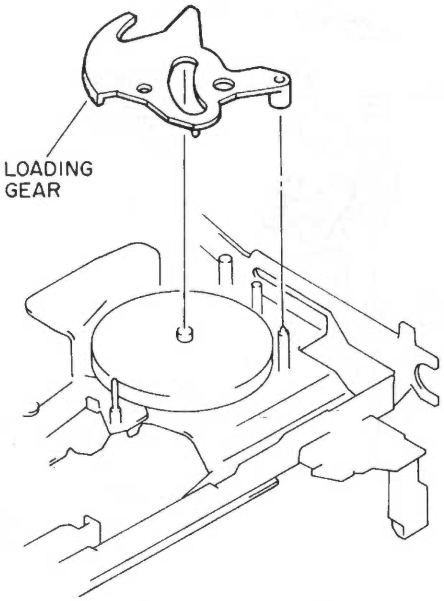
LOADING GEAR

Fig. 44 - Loading Gear Removal

Reel Gear Block/Loading Motor Removal (Figs. 45)

1. Remove the Take-up Sensor circuit board.
2. Remove the capstan belt from the reel gear block.
3. Disconnect one (1) connector on the mechanism state switch.
3. Remove one (1) screw holding the mechanism state switch.
4. Remove the mechanism state switch and relay gear.
5. Remove four (4) screws holding the reel gear block and lift the reel gear block from the transport mechanism.

Note: After reinstalling, perform the "Mechanism State Switch/Drive Gear Adjustment" in the "Mechanical Adjustment Section" of this service publication.

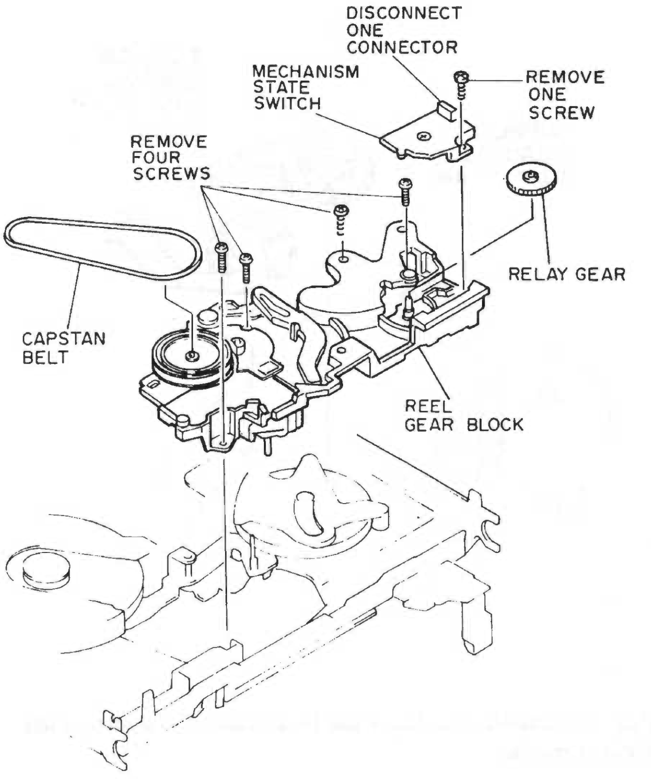
DISCONNECT ONE CONNECTOR
MECHANISM STATE SWITCH
REMOVE ONE SCREW
REMOVE FOUR SCREWS
RELAY GEAR
CAPSTAN BELT
REEL GEAR BLOCK

Fig. 45 - Reel Gear Block/Loading Motor Removal

MECHANISM DISASSEMBLY (Continued)

Tension Pole Drive Arm Removal (Fig. 46)

1. Remove the cam gear plate.
2. Lift out the tension pole drive arm from the transport mechanism.

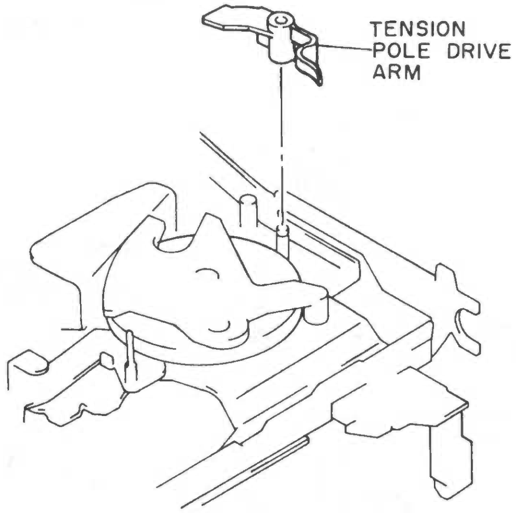

Fig. 49 - Tension Pole Drive Arm Removal

Drive Gear Removal (Fig.47)

1. Remove the Take-up Sensor circuit board, the reel gear block, the loading gear and the tension pole drive arm.
2. Lift out the drive gear from the transport mechanism.

Note: After reinstalling, perform the "Mechanism State Switch/Drive Gear Adjustment" in the "Mechanical Adjustment Section" of this service publication.

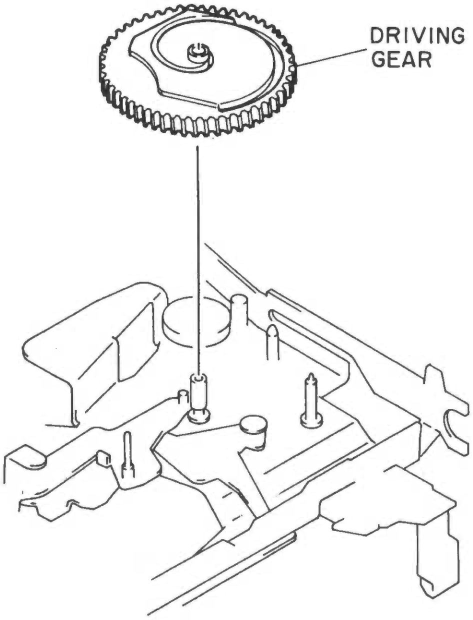

Fig. 47 - Drive Gear Removal

Cassette Holder Lock Removal (Fig. 48)

1. Remove the Take-up Sensor circuit board, the capstan motor and the reel block.
2. Remove one (1) screw holding the cassette holder lock.
3. Release one (1) tab and remove the cassette holder lock from the transport mechanism.

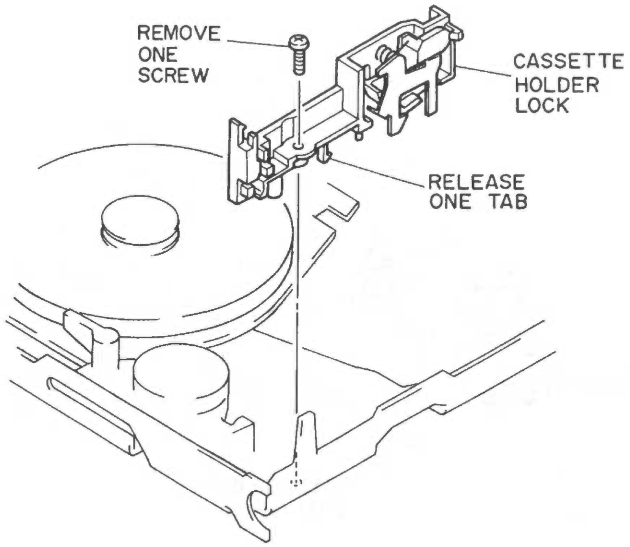

Fig. 48 - Cassette Holder Lock Removal

MECHANISM DISASSEMBLY (Continued)

Cam Gear Arm Removal (Fig. 49)

1. Remove the Take-up Sensor circuit board, the capstan motor, the reel gear block, the loading gear, the tension pole drive arm and the drive gear.
2. Move the cam gear arm in the direction of the arrow and lift out the cam gear arm from the transport mechanism.

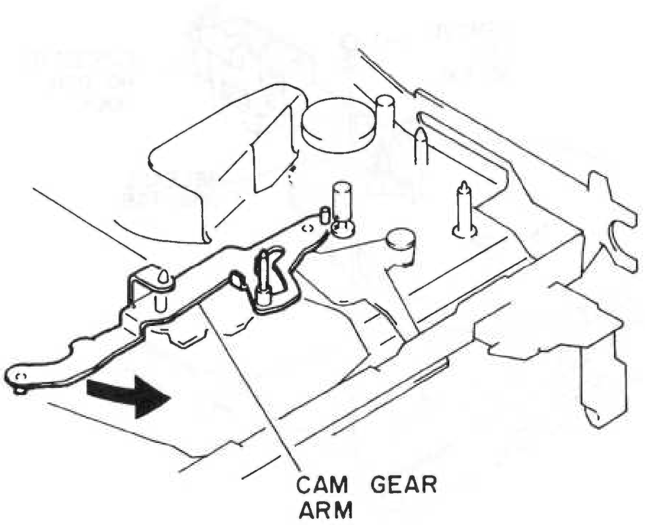

Fig. 49 - Cam Gear Arm Removal

Cassette Holder Lock Drive Arm Removal (Fig. 50)

1. Remove the Take-up Sensor circuit board, the reel gear block, the loading gear, the tension pole drive arm, the drive gear and the cam gear arm.
2. Release the spring between the cassette holder lock drive arm and the transport mechanism chassis.
3. Lift out the cassette holder lock drive arm from the transport mechanism.

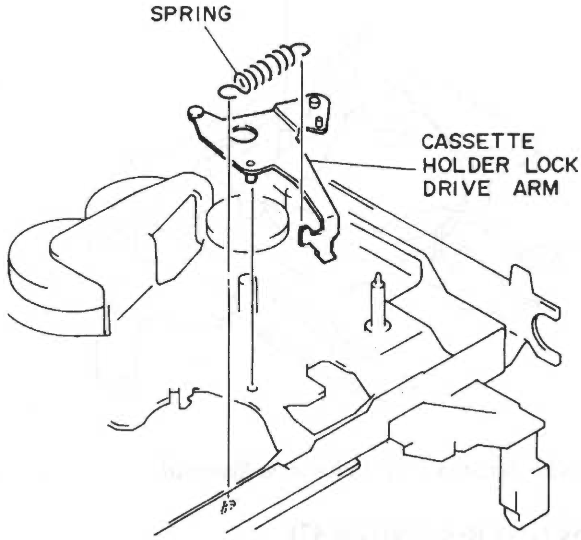

Fig. 50 - Cassette Holder Lock Drive Arm Removal

AC ADAPTER/CHARGER (221355) DISASSEMBLY

Bottom Case Removal (Fig. 51)

1. Remove two (2) screws holding the bottom and top cases.
2. Remove the bottom case in the direction of arrow (A) while releasing one (1) tab and remove the bottom case from the top case.

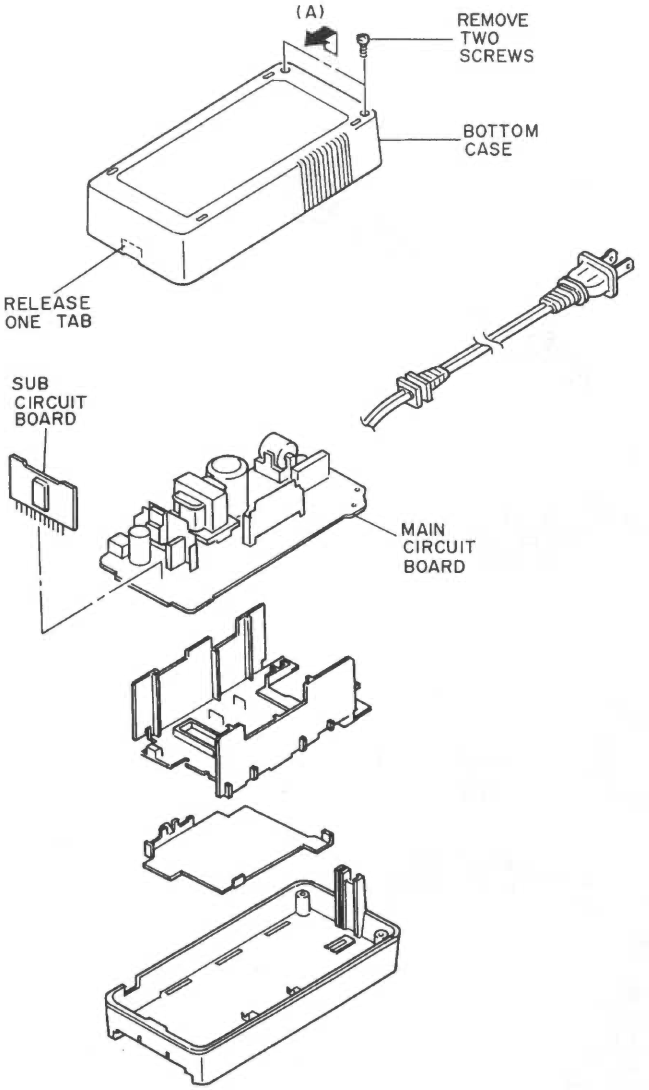
(A)
REMOVE TWO SCREWS
BOTTOM CASE
RELEASE ONE TAB
SUB CIRCUIT BOARD
MAIN CIRCUIT BOARD

Fig. 51 - Bottom Case Removal

Top Case Removal (Fig. 52)

1. Remove the bottom case.
2. Unsolder two (2) points on the adapter board (terminal for the charger).
3. Remove the main block from the top case.

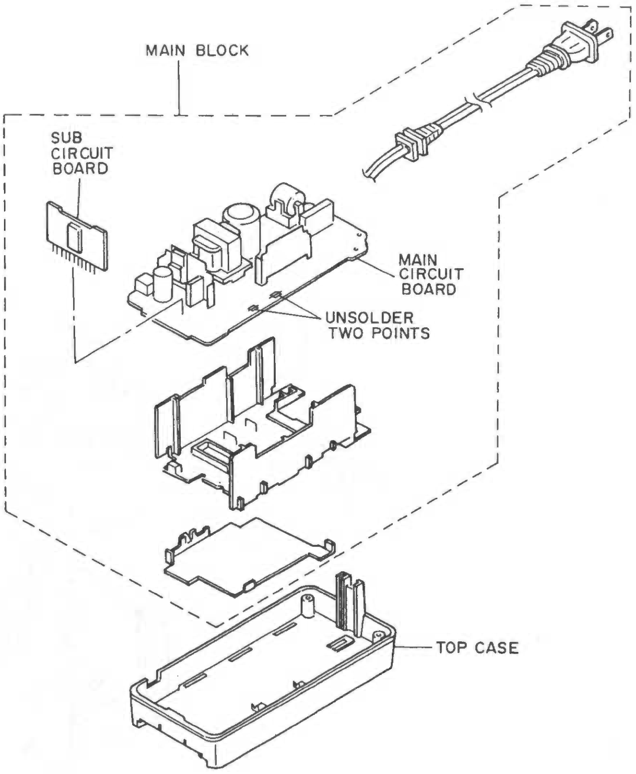
MAIN BLOCK
SUB CIRCUIT BOARD
MAIN CIRCUIT BOARD
UNSOLDER TWO POINTS
TOP CASE

Fig. 52 - Top Case Removal

AC ADAPTER/CHARGER (221355) DISASSEMBLY (Continued)

Main Circuit Boards/Sub Circuit Board Removal (Fig. 53)

1. Remove the bottom case, the top case.
2. Unsolder two (2) points on shield cover.
3. Remove the shield cover and shield case.
4. Unsolder sixteen (16) points of the terminals on the sub circuit board.

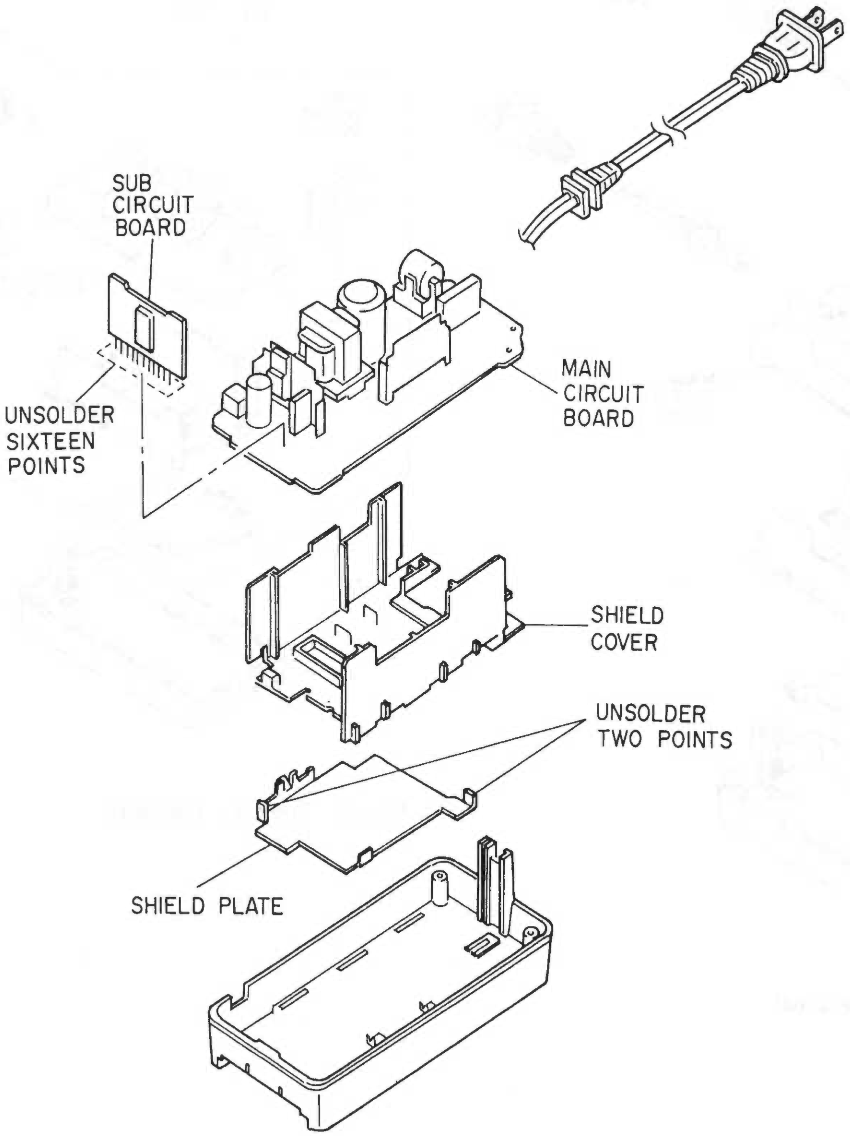
SUB CIRCUIT BOARD
UNSOLDER SIXTEEN POINTS
MAIN CIRCUIT BOARD
SHIELD COVER
UNSOLDER TWO POINTS
SHIELD PLATE

Fig. 53 - Main Block/Sub Circuit Board Removal

Mechanical Adjustment Subindex

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MECHANICAL ADJUSTMENTS (Continued)

Some disassembly is required to access the adjustment locations. Refer to the "Disassembly Section" in this service publication for disassembly instructions.

Operating the VCR Without a Tape

For some mechanical adjustments (and troubleshooting) it becomes necessary to operate the instrument without a cassette tape.

To operate the mechanism without a tape, cover the supply and take-up end sensor with a piece of black electrical tape. The tape must shield the sensors from all light for proper operation. Close the cassette holder without inserting a cassette tape.

In this configuration, all mechanism modes are functional. However, when the instrument is placed in the rewind mode, the mechanism will return to the stop mode after several seconds. This occurs because the take-up reel does not turn in the rewind mode unless a tape is present, and the system control microprocessor interprets this as an "end of tape" condition. The rewind mode can be maintained if the take-up reel is manually rotated.

To place the tape guides in the loaded (play) position without applying power to the instrument, perform the following steps:

1. Disconnect one (1) connector (CN911) from the Main circuit board.
2. Connect the positive (+) terminal of a DC power supply to pin 1 (brown wire) of CN911 and the negative (-) terminal of the DC power supply to pin 2 (red wire) of CN911. Apply approximately 7.5VDC to load the tape guides. Disconnect the power supply as soon as the tape guides are fully loaded.
3. Reverse the power supply connections to unload the tape guides (and place the cassette holder in the UP position). Disconnect the power supply as soon as the tape guides (and cassette holder) are fully unloaded.

Note: Power may be reapplied after either step 2 or step 3 above. When reapplying power, first reconnect CN911 on the Main circuit board, then apply DC power and press the *Power On* button. If power is reapplied after step 2, the unit will return to the stop mode.

Rough Tape Travel Confirmation

Note: This confirmation check should be performed after any servicing procedure that could affect tape travel (tape guide replacement, A/C head replacement etc.) and should be performed prior to any adjustment procedures that require the use of a test tape.

Using a blank tape, place the instrument in the play mode and note the following:

1. The tape should be in full contact with all tape guide posts.
2. The tape should be crease-free with no tape slack.
3. The impedance roller should be moving freely.
4. The tape should be perpendicular to the longitudinal axis of the heads when crossing the erase head and the audio/control (A/C) head.
5. The tape should be centered top to bottom on the head when crossing the full erase head.
6. The tape should follow the lower edge of the guide surface on the D-D cylinder.

Mechanical Interchangeability Confirmation (Fig. 1)

Note: This confirmation check should be performed after any servicing procedure that could affect interchangeability (upper cylinder replacement, tape guide replacement, audio/control (A/C) head replacement, etc.). The **"Rough Tape Travel Confirmation Procedure"** should be completed before starting the procedure.

1. Connect the channel-1 scope probe to TP202 on the Main circuit board.
2. Connect the channel-2 scope probe to TP201 on the Main circuit board and trigger the oscilloscope on channel-2.
3. Press the two (2) *Tracking* controls (UP/DOWN) simultaneously to set the tracking to the center of its range.
4. Load the instrument with the monoscope test tape and place the camcorder in the play mode.
5. Using the Tracking controls, adjust the center of the playback FM envelope (TP202) for maximum amplitude.
6. Adjust the oscilloscope vertical gain control so that the maximum envelope amplitude is four (4) graticule divisions.
7. Press the *Tracking* control (UP) button so that the maximum envelope amplitude is three (3) graticule divisions.
8. Confirm that the minimum envelope amplitude is 1.6 graticule divisions or greater.
9. Press the *Tracking* control (DOWN) button to adjust the FM envelope waveform so that the maximum envelope amplitude is three (3) graticule divisions.
10. Confirm that the minimum envelope amplitude is 1.6 graticule divisions or greater.
11. If the confirmation requirements are satisfied, tape guide adjustment is not necessary.
12. Press both *Tracking* controls (UP/DOWN) simultaneously to reset the tracking to the center range position and adjust the *Audio/Control Head X-value* screw for maximum FM envelope.

Note: If the D.D. cylinder motor assembly has been replaced, perform the "PG Shifter Adjustment Procedure" in the "Electrical Adjustment Section" of this service publication.

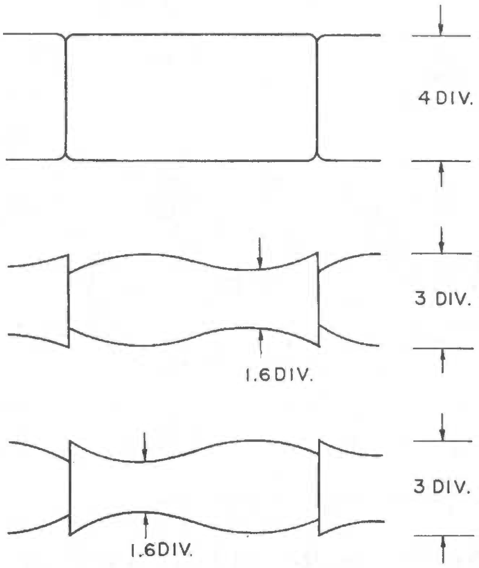
4 DIV.
3 DIV.
1.6 DIV.
3 DIV.
1.6DIV.

Fig. 1 - Interchangeability Confirmation (FM Envelope)

Reel Table Height Adjustment (Fig. 2)

1. Install the height reference plate and place the cassette holder in the DOWN position. Refer to the "Replacement Parts List" for the height reference plate stock number.
2. Check the reel table height with the reel table height jig confirming that the top surface of the reel table is between point (A) and point (B). Refer to the "Replacement Parts List" for the height jig stock number.

Note: The reel table height is adjusted by changing the washer stack located under each reel table. Two (2) sizes of washers are available (0.25mm and 0.5mm thickness). These washers can be used in combination to achieve equal reference heights for both the take-up and supply reel tables.

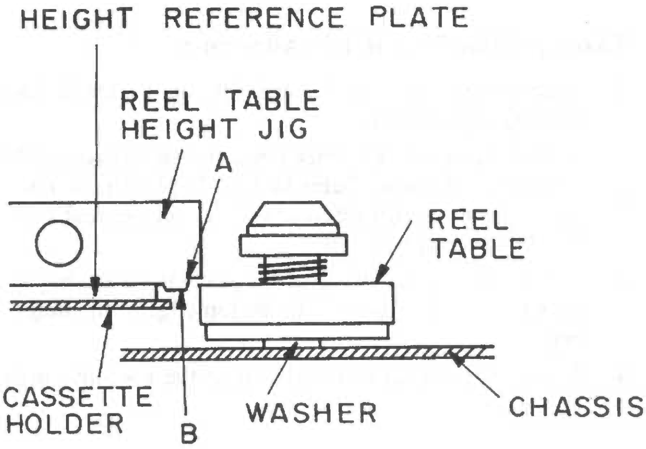
HEIGHT REFERENCE PLATE
REEL TABLE HEIGHT JIG
A
REEL TABLE
CASSETTE HOLDER
B
WASHER
CHASSIS

Fig. 2 - Reel Table Height Adjustment

Tension Arm Position Adjustment (Fig. 3)

1. Place the tension spring in position (C) on the spring holder.
2. Cover the supply end sensor (located midway on the left side of the chassis) with a piece of black electrical tape to block all light from it.
3. Place the instrument in the play mode without installing a cassette tape. Refer to "Operating the VCR without a Cassette Tape" in the "Mechanical Adjustment Section" of this service publication.
4. After loading is complete, loosen screw (B) holding the tension band holder and adjust the position of the tension band holder so that the tension pole is positioned in the concave section (A) of the guide roller rail.
5. After adjustment is complete, tighten screw (B).

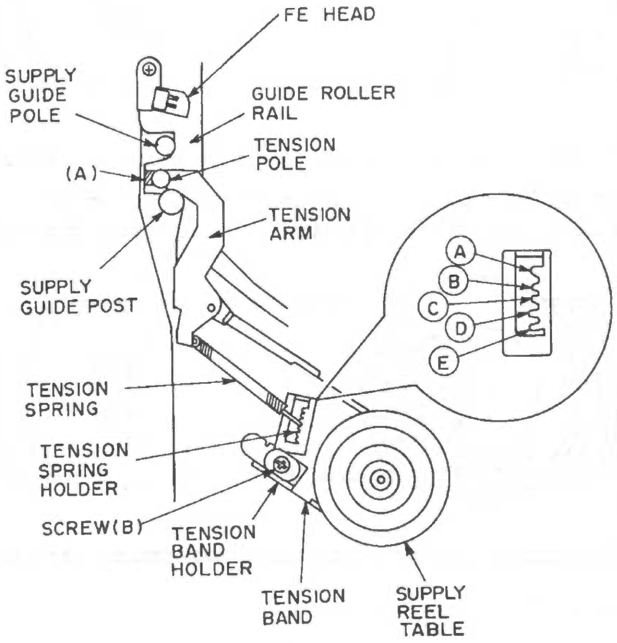
FE HEAD
SUPPLY GUIDE POLE
GUIDE ROLLER RAIL
TENSION POLE
(A)
TENSION ARM
SUPPLY GUIDE POST
A
B
C
D
E
TENSION SPRING
TENSION SPRING HOLDER
SCREW(B)
TENSION BAND HOLDER
TENSION BAND
SUPPLY REEL TABLE

Fig. 3 - Tension Arm Position Adjustment

Back Tension Adjustment (Fig. 4)

When the back tension is properly adjusted, the service test tape (recorded under laboratory conditions) will play back with minimum skew error picture displacement in the line following head switching.

Note:
- There are two (2) types of back tension meters. When using back tension meter stock number 156391, observe the readings in parenthesis ( ).
- Make sure that the instrument is positioned horizontally (on side) when performing the adjustment procedure.

1. Load the instrument with the back tension meter.
2. Place the instrument in the play mode.
3. Read the scale on the supply reel side of the tension meter. The reading should be between 19 and 26 (17 and 24).

4. Move the tension arm spring to position (A) or (B) on the spring holder when the back tension is 27 (25) or higher. Move the tension arm spring to position (D) or (E) on the spring holder when the back tension is 18 (16) or lower.
5. Adjust the back tension for a nominal reading of 19 - 26 (17 -24). If the back tension requires a large change (5 or more on the scale), reconfirm the "Tension Arm Position Adjustment" after completing the "Back Tension Adjustment Procedure".

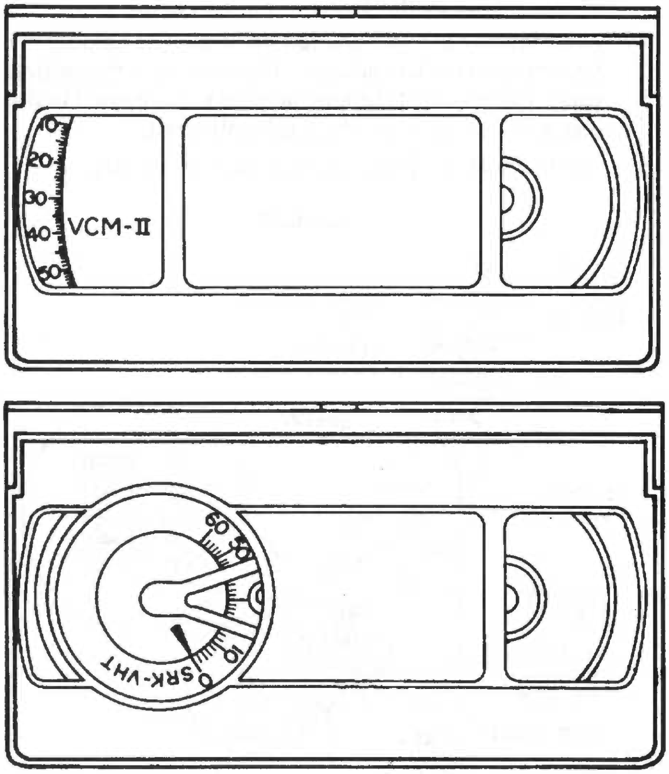

Fig. 4 - Back Tension Adjustment

Brake Torque Confirmation (Fig. 5)

1. With the instrument in the stop mode, remove the cassette lid and clean the brake surfaces on the supply and take-up relay gears using "Kim Wipes" and solvent before beginning the confirmation procedure.
2. Attach the adaptor jig to the torque gauge. Refer to the "Replacement Parts List" for the adaptor jig and torque gauge stock numbers.
3. Place the torque gauge on the supply reel table.
4. Turn the torque gauge in a clockwise direction until the brake begins to slip against the supply reel table. The torque reading should be greater than 140g/cm.
5. Place the torque gauge on the take-up reel table and turn the gauge counterclockwise. The torque reading should be more that 100g/cm.

Note: Brake torque problems can cause tape stretch, broken tape and tape spillage. These symptoms can usually be corrected by proper cleaning. If cleaning does not provide results, replace the defective parts and reconfirm brake torque.

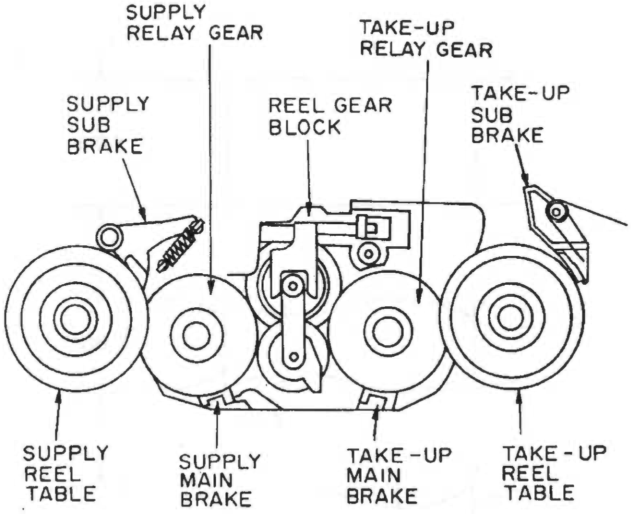

Fig. 5 - Brake Torque Confirmation

Play/Fast Forward/Rewind Torque Confirmation

1. Remove the cassette lid.
2. Cover both the take-up and supply end sensors with black electrical tape.
3. Attach the adapter jig to the torque gauge. Refer to the "Replacement Parts List" for the torque gauge and adapter jig stock numbers.
4. Place the torque gauge on the take-up reel.
5. Place the instrument in the play mode without installing a cassette tape. Refer to "Operating the VCR without a Cassette Tape" in the "Mechanical Adjustment Section" of this service publication. The torque reading should be between 80 and 110g/cm.
6. Place the instrument in the fast forward mode. The torque reading should be 400g/cm minimum.
7. Place the torque gauge on the supply reel table and operate the instrument in the rewind mode. The torque reading should be 400g/cm minimum.

Take-up Guide Poles Height Adjustment (Fig. 6)

1. Remove the cassette lid and the right case before making adjustments.
2. Install the height reference plate and set the reel table height jig in place. Refer to the "Replacement Parts List" for the height reference plate and the reel table height jig stock numbers.
3. Adjust the hex nut on top of the guide poles so that the upper flange is aligned with the top edge of the height jig.
4. Use the height jig to rough adjust the take-up guide roller.

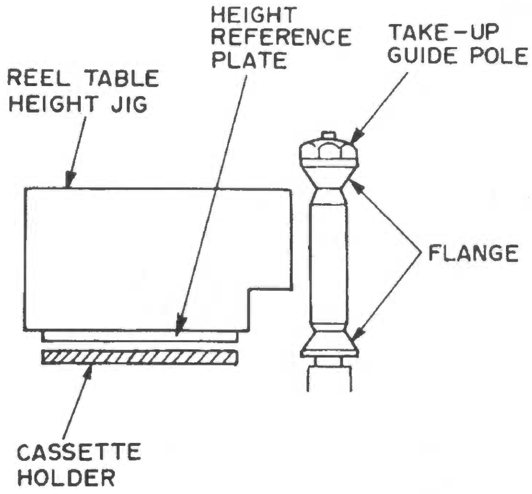

Fig. 6 - Take-up Guide Poles Height Adjustment

Creasing/Tape Slack Adjustment (Fig. 7)

1. Load the instrument with a blank tape and place the unit in the play mode.
2. With the unit operating in the play mode, inspect the tape path for creasing or frilling along the top or bottom edges of the tape. If creasing or frilling is detected, check the tape as it goes onto and off of the upper cylinder. The tape should follow the lower edge guide on the cylinder.
3. If the tape is high on the guide surface of the cylinder, rough adjust the supply and take-up guide rollers to correct the condition.

Note: If adjustment was required to eliminate creasing or frilling of the tape, perform the "Take-up/Supply Guide Roller Adjustment" in the "Mechanical Adjustment Section" of this service publication.

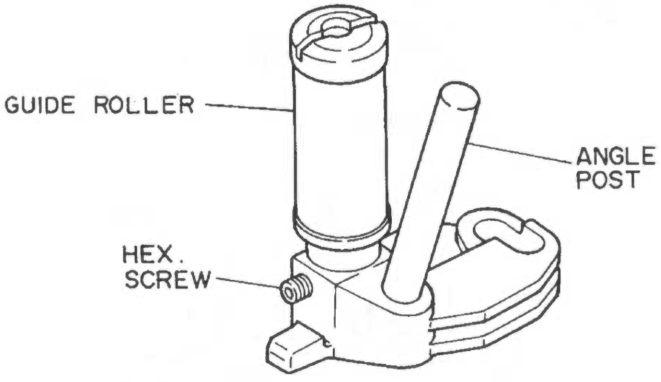

Fig. 7 - Creasing/Tape Slack Adjustment

Supply/Take-up Guide Rollers Adjustment (Fig. 8)

1. Connect the channel-1 oscilloscope probe (100mV per div./2msec.) to TP202 on the Main circuit board.
2. Connect the channel-2 scope probe (2V per div.) to TP201. Trigger the oscilloscope on channel-2.
3. Press the two *Tracking* control buttons (UP and DOWN) simultaneously while playing back the monoscope test tape to set the tracking to its center position.
4. Loosen the hex screws on the base of the supply guide roller and the take-up guide roller.
5. Adjust the supply and take-up guide rollers using a flat bladed screwdriver (clockwise) until the bottom edge of the tape slightly bows at the bottom of the guide rollers.
6. Observe the FM envelope at TP202 while adjusting the take-up guide roller (counterclockwise) for maximum FM envelope amplitude.
7. Adjust the supply guide roller (counterclockwise) for maximum FM envelope amplitude.
8. Touch up (slightly adjust) the supply guide roller and the take-up guide rollers for maximum/flat FM envelope.
9. Tighten the hex screws at the base of the guide rollers.

Note: Perform the "Audio/Control (A/C) Head Horizontal Position Adjustment" in the "Mechanical Adjustment Section" so that the maximum FM envelope occurs at the center of the tracking range.

Audio/Control (A/C) Head Rough Adjustment (Fig. 9)

Perform this adjustment before performing the "Audio/Control (A/C) Head Height/Tilt/Azimuth and Horizontal Position Adjustments".

1. Remove the cassette lid and the left case.
2. Install the height reference plate. Refer to the "Replacement Parts List" for the height reference plate stock number.
3. Adjust the Height Nut (A), Azimuth Screw (B) and the Tilt Screws (C) and (D) so that the height difference between the height reference plate and the audio/control (A/C) head plate is approximately 1.78mm and the audio/control (A/C) head base and plate are parallel.

Audio/Control (A/C) Head Height/Tilt/Azimuth Adjustment (Fig. 9)

1. Connect the oscilloscope (2V per div./1msec.) to the audio output jack.
2. Playback the 1kHz audio alignment tape. Refer to the "Replacement Parts List" for the alignment tape stock number.
3. Alternately adjust the Height Nut (A), the Azimuth Screw (B) and the Tilt Screw (C) for maximum audio output.

MECHANICAL ADJUSTMENTS (Continued)

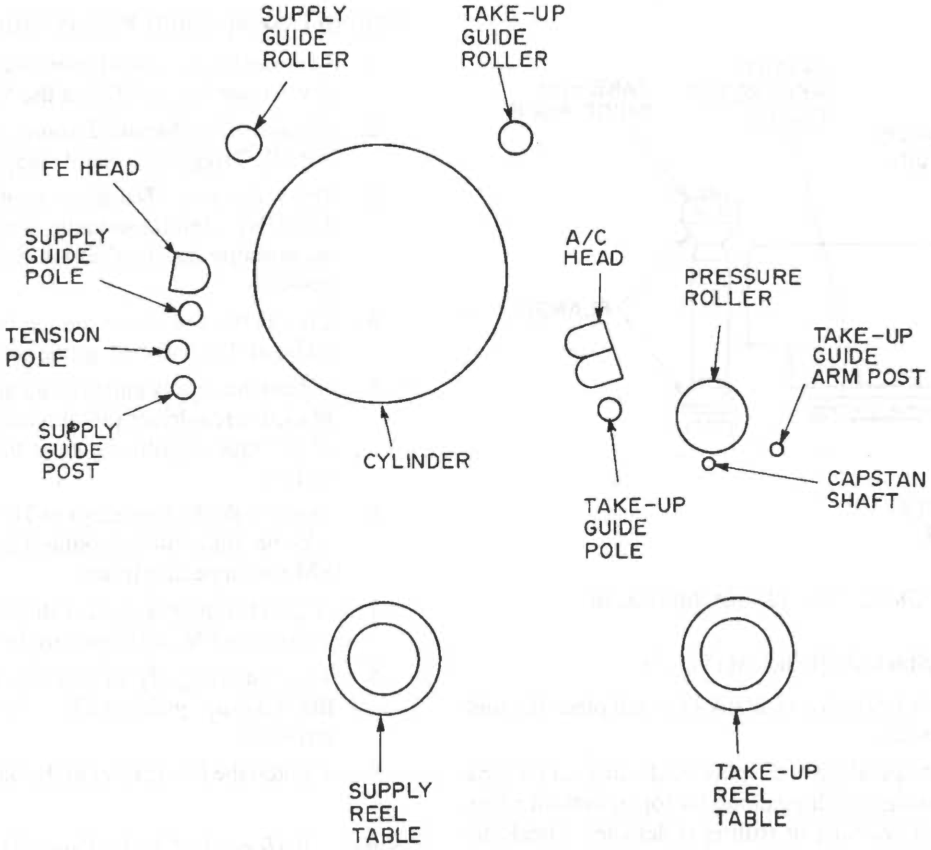
SUPPLY GUIDE ROLLER
TAKE-UP GUIDE ROLLER
FE HEAD
SUPPLY GUIDE POLE
TENSION POLE
SUPPLY GUIDE POST
CYLINDER
A/C HEAD
PRESSURE ROLLER
TAKE-UP GUIDE ARM POST
CAPSTAN SHAFT
TAKE-UP GUIDE POLE
SUPPLY REEL TABLE
TAKE-UP REEL TABLE

Fig. 8 - Supply/Take-up Guide Rollers Adjustment

Audio/Control (A/C) Head Horizontal Position Adjustment (Fig. 9)

1. Connect the channel-1 scope probe (100mV per div./ 1msec.) to TP202.
2. Connect the channel-2 scope probe (1V per div.) to TP201. Trigger the oscilloscope on channel-2.
3. Press the two (2) *Tracking* controls (UP and DOWN) simultaneously to set the tracking to the center of its range.
4. Play back the monoscope test tape and adjust the X-value nut so that the output at TP202 (FM envelope) is maximum.

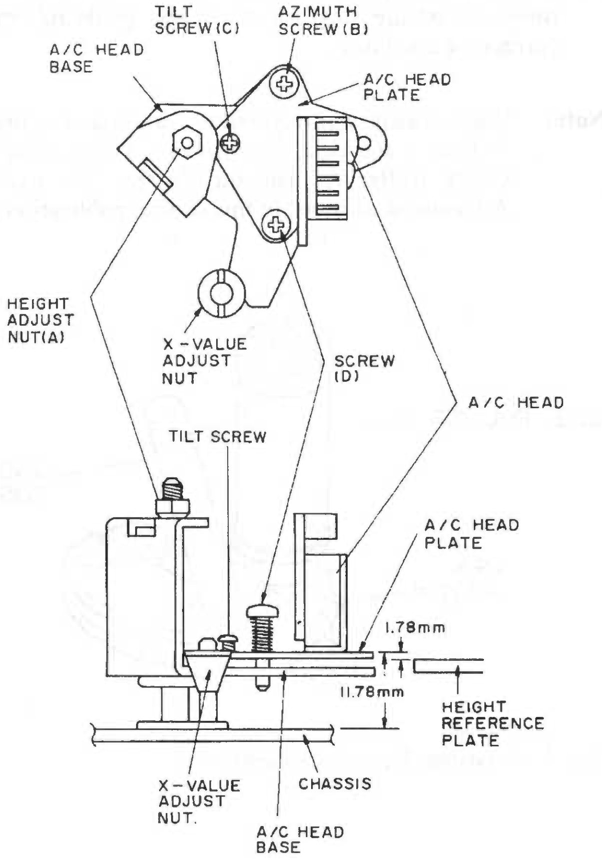
TILT SCREW(C)
AZIMUTH SCREW(B)
A/C HEAD BASE
A/C HEAD PLATE
HEIGHT ADJUST NUT(A)
X-VALUE ADJUST NUT
SCREW (D)
A/C HEAD
TILT SCREW
A/C HEAD PLATE
1.78mm
11.78mm
HEIGHT REFERENCE PLATE
CHASSIS
X-VALUE ADJUST NUT.
A/C HEAD BASE

Fig. 9 - Audio/Control (A/C) Head Horizontal Position Adjustment

MECHANICAL ADJUSTMENTS (Continued)

Loading Cam Gears (Supply/Take-up) Alignment (Fig. 10)

Perform this adjustment when reinstalling the loading cam gears. Be sure to reconfirm this alignment procedure when installing the loading gear.

1. Install the take-up and supply loading cam gears and align mark (A) on the supply loading cam gear with mark (B) on the take-up loading cam gear.
2. Confirm that the supply and take-up guide roller bases are in the unloaded state.

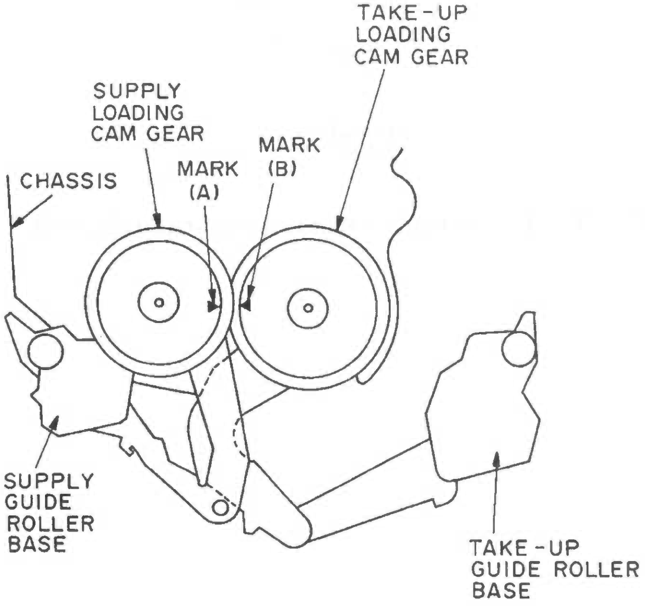
TAKE-UP
LOADING
CAM GEAR
SUPPLY
LOADING
CAM GEAR
MARK
(B)
MARK
(A)
CHASSIS
SUPPLY
GUIDE
ROLLER
BASE
TAKE-UP
GUIDE ROLLER
BASE

Fig. 10 - Loading Cam Gears (Supply/Take-up) Alignment

Mechanism State Switch/Drive Gear Alignment (Figs. 11, 12)

1. Align section (A) of the mechanism state switch with mark (B) on the rotor (Fig. 11).
2. Align hole (D) in the relay gear with the hole in the chassis.
3. Move the cassette holder lock drive arm so that the pin comes into contact with section (H) of the cam gear arm (Fig. 12).
4. Install the drive gear into the chassis so that mark (E) on the relay gear and hole (F) in the drive gear are aligned. Confirm that hole (G) in the drive gear and the hole in the chassis overlap each other (Fig. 11).
5. Install the mechanism state switch in the condition described in step 1 into the chassis. Confirm that mark (E) on the relay gear and hole (F) in the drive gear are aligned.

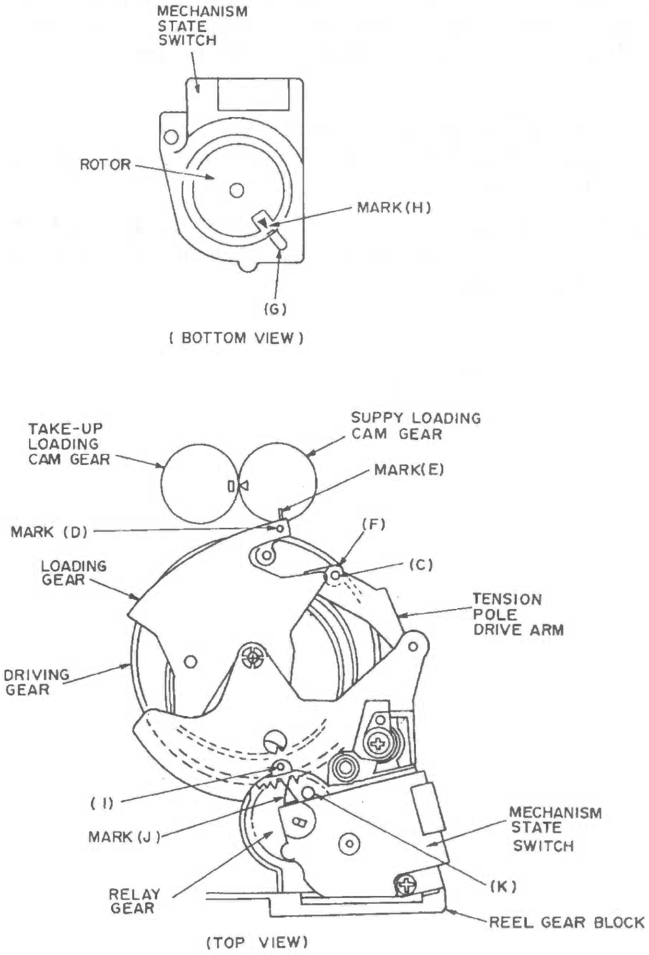
MECHANISM
STATE
SWITCH
ROTOR
MARK(H)
(G)
(BOTTOM VIEW)
TAKE-UP
LOADING
CAM GEAR
SUPPY LOADING
CAM GEAR
MARK(E)
MARK (D)
(F)
LOADING
GEAR
(C)
TENSION
POLE
DRIVE ARM
DRIVING
GEAR
(I)
MARK (J)
MECHANISM
STATE
SWITCH
RELAY
GEAR
(K)
REEL GEAR BLOCK
(TOP VIEW)

Fig. 11 - Mechanism State Switch/Drive Gear Alignment

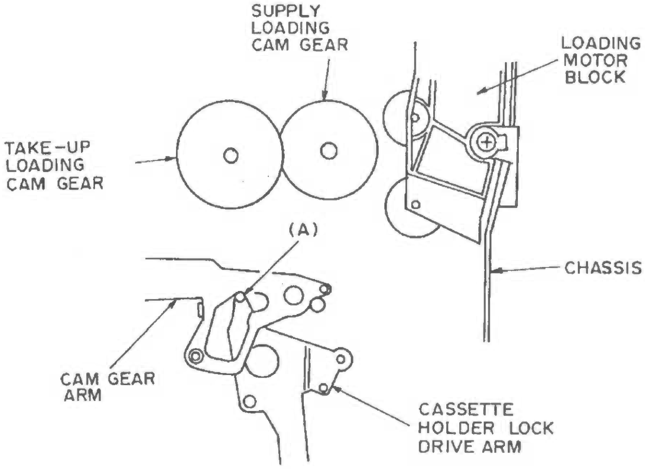
SUPPLY
LOADING
CAM GEAR
LOADING
MOTOR
BLOCK
TAKE-UP
LOADING
CAM GEAR
(A)
CHASSIS
CAM GEAR
ARM
CASSETTE
HOLDER LOCK
DRIVE ARM

Fig. 12 - Mechanism State Switch/Drive Gear Alignment

MECHANICAL ADJUSTMENTS (Continued)

Loading Gear/Tension Pole Drive Arm Alignment (Fig. 13)

Perform this alignment procedure when reinstalling the loading gear and the tension pole drive arm. Confirm that the loading cam gears are installed correctly and are in the unloaded state before performing this procedure.

1. Reinstall the loading gear so that mark (A) on the loading gear and mark (B) on the supply loading cam gear are aligned.
2. Reinstall the tension pole drive arm so that mark (D) on the relay gear and hole (C) in the tension pole drive arm are aligned. ■

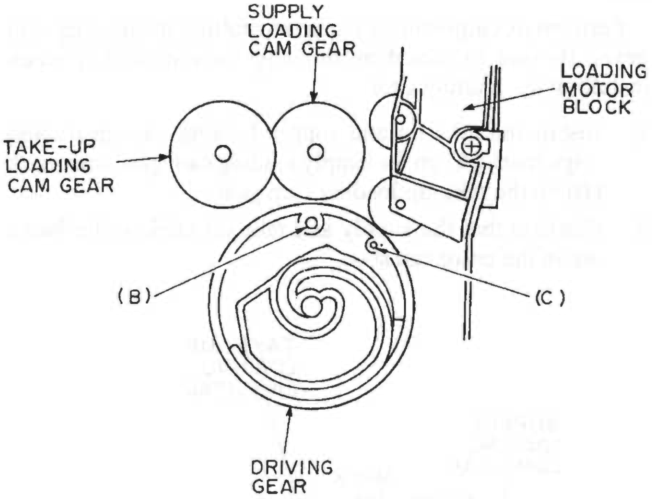
SUPPLY LOADING CAM GEAR
LOADING MOTOR BLOCK
TAKE-UP LOADING CAM GEAR
(B)
(C)
DRIVING GEAR

Fig. 13 - Loading Gear/Tension Pole Drive Arm Alignment

Electrical Adjustment Subindex

AC Adapter/Charger (221355)

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ELECTRICAL ADJUSTMENTS (Camera Section)

ADJUSTMENT CONDITIONS

Chart Illumination

2500 Lux

Setting Up (Fig. 1)
Connect the camcorder and the proper test equipment.

Allow the camcorder and the test equipment to warm up for at least 30 minutes prior to making adjustments.

Customer Control Presets

Camera/Off/VCR Switch	CAMERA
Inst. Zoom	Non display
Date	Non display
Display	Non display
Title	Non display
Focus	Auto mode
Fade	Normal mode

Chart Position
Position the chart 30 to 40 cm from the camera lens and adjust the zoom position to fill the monitor screen with the chart image.

When using Video Out (A/V OUT), be sure to terminate the jack with 75 ohms.

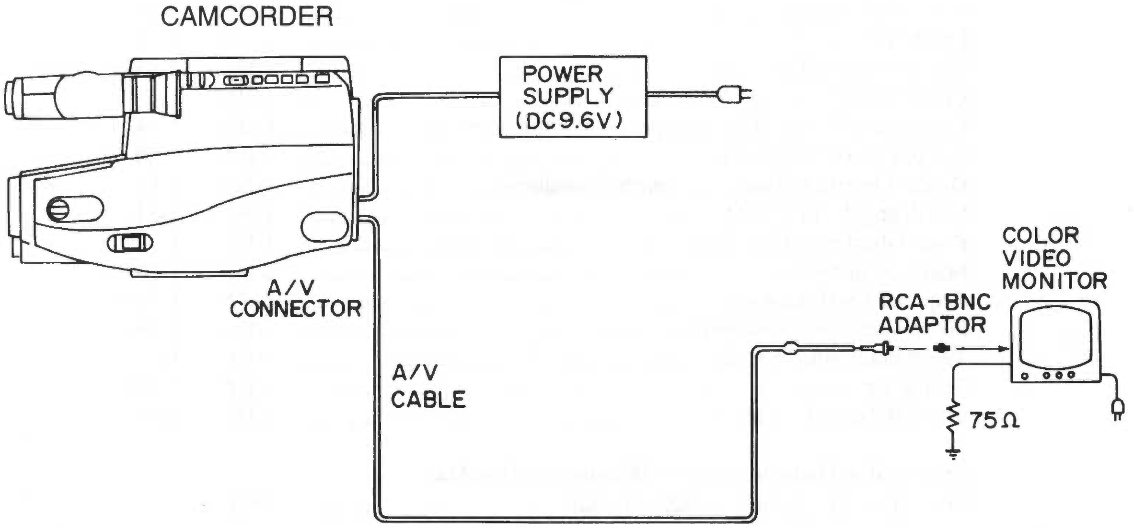

Fig. 1 - Camcorder Setup

Required Test Equipment
The following test equipment is required for adjusting the camera.

Oscilloscope - Dual trace, 25MHz bandwidth with channel inversion capability, and 10:1 probe.

Digital Volt Meter (DVM)

Frequency Counter

Vectorscope

Color Video Monitor

Tripod

Gray Scale Chart with 10 or 11 steps.

3200 degrees Kelvin Light Box or Reflected Charts using 3200 degree Kelvin Quarts Lighting.

NTSC Color Chart

Light Balancing Filter (C12)

Personal Computer

RS-232 serial cable (25 or 9 pin)

DSP adjustment fixture

3P Extension Cable

Waveform Monitor (optional)

Light Meter (optional)

Back Focus Chart A

DC power Supply (9.6V)

DC Power Supply (5V)

Color Bar generator

Note: See Replacement Parts List for stock numbers of Gray Scale Chart, NTSC Color Chart and Back Focus chart.

ELECTRICAL ADJUSTMENTS (Camera Section Continued)

CIRCUIT BOARD LOCATION

1. Sensor/Process Circuit Board
2. Supply Sensor Circuit board
3. Take-up Sensor Circuit Board
4. Main Circuit Board
5. Control Circuit Board

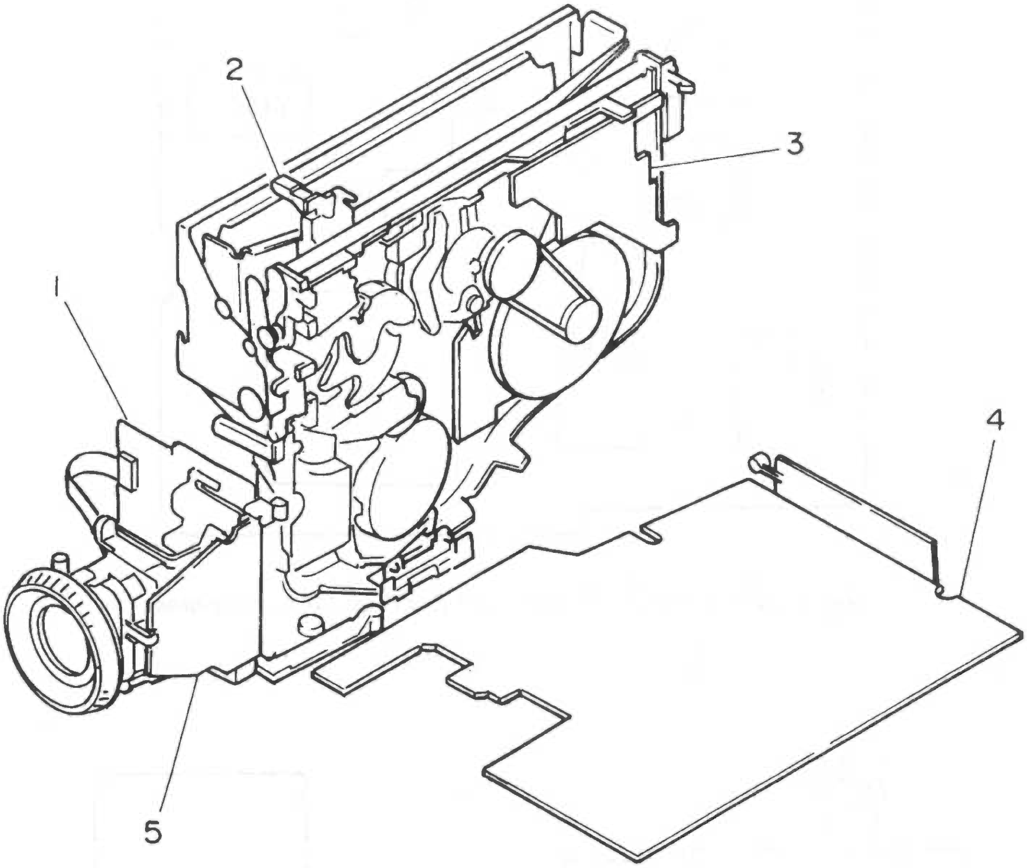

Fig. 2 - Circuit Board Location

ELECTRICAL ADJUSTMENTS (Camera Section Continued)

TEST POINT/CONTROL LOCATION

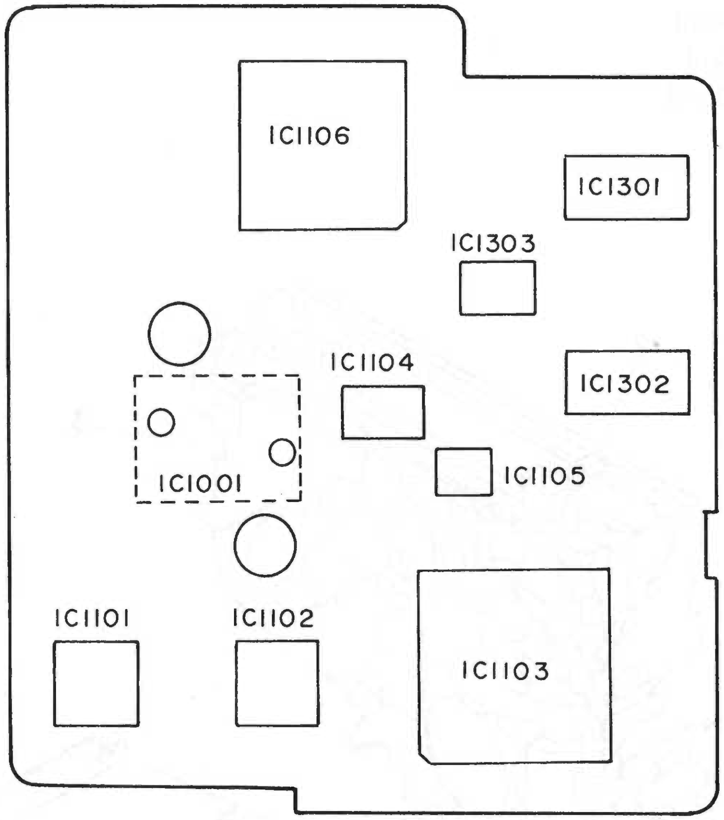
IC1106
IC1301
IC1303
IC1104
IC1302
IC1105
IC1001
IC1101
IC1102
IC1103

Fig. 3 - Sensor/Process Circuit Board Test Point/Control Location

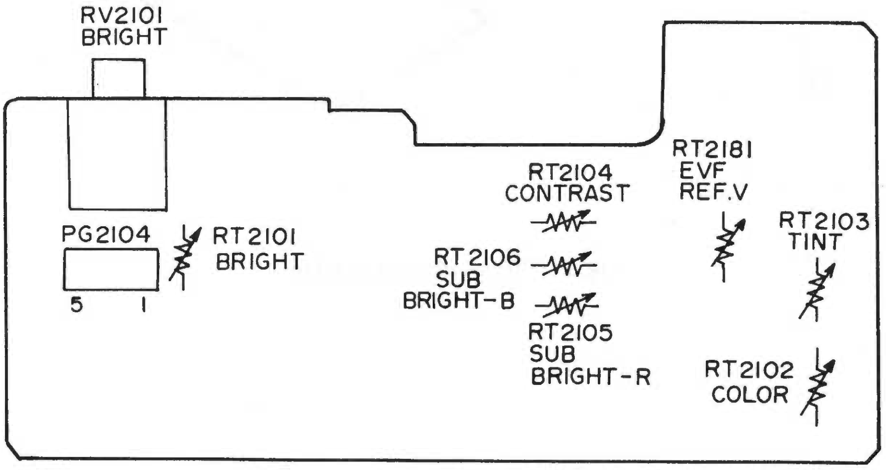
RV2101
BRIGHT
PG2104
5
1
RT2101
BRIGHT
RT2104
CONTRAST
RT2106
SUB
BRIGHT-B
RT2105
SUB
BRIGHT-R
RT2181
EVF
REF.V
RT2103
TINT
RT2102
COLOR

Fig. 4 - Color EVF Circuit Board Test Point/Control Location

ELECTRICAL ADJUSTMENTS (Camera Section Continued)

Digital/Electric Volume Adjustment Procedures (Fig. 5)

Before beginning the camera section adjustment procedures, remove the case and connect the camcorder/test equipment. Note that when the EVF is removed, no operation modes will be displayed on the monitor screen.

All camera adjustment procedures are performed through the use of an IBM® compatible personal computer and a special DSP jig. Refer to the "Computer Adjustment Set-up/ Operation Instructions" for assistance. Refer to the "Replacement Parts List" for the extension cables, the adjustment software and the DSP jig stock numbers.

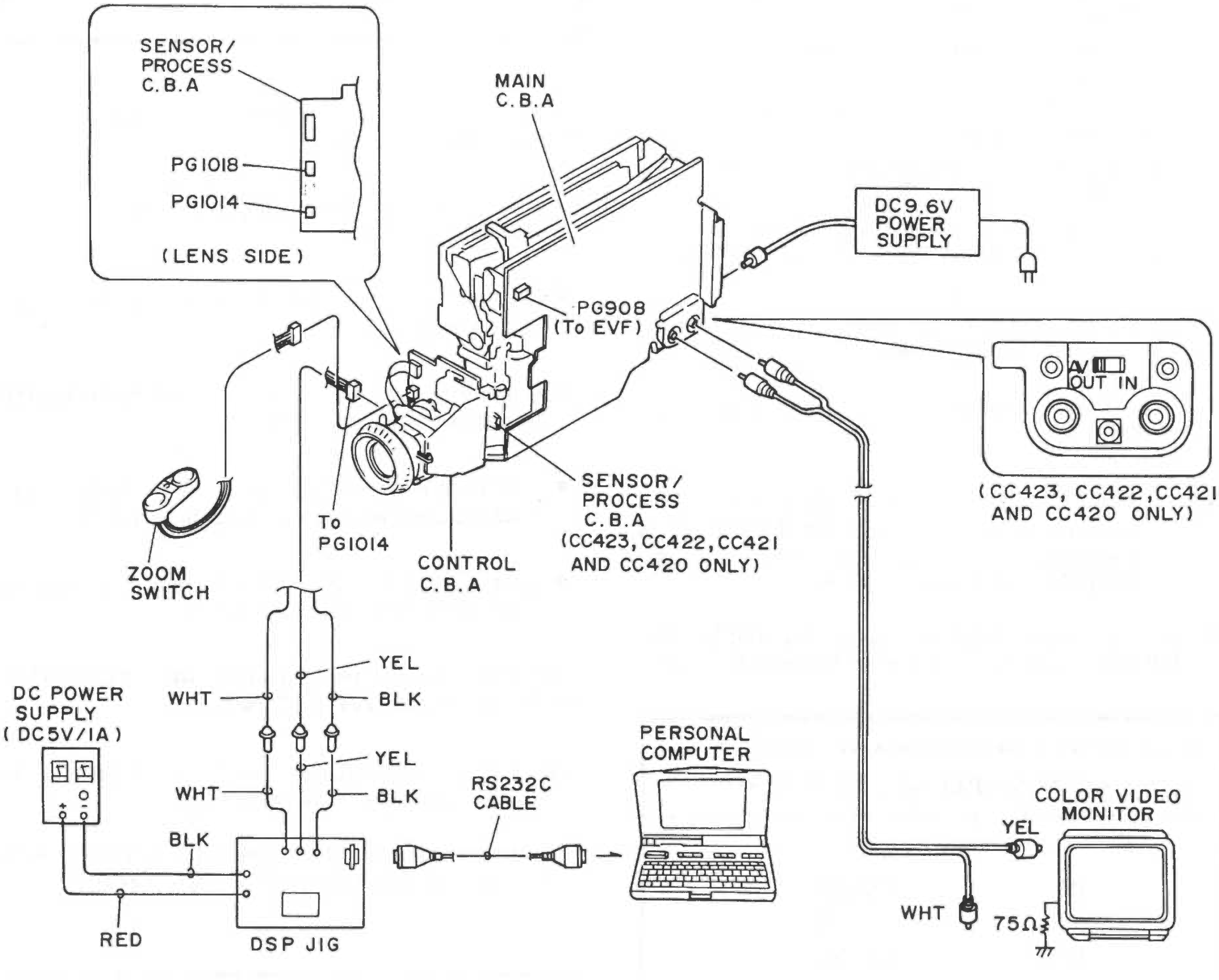
SENSOR/ PROCESS C.B.A
PG1018
PG1014
(LENS SIDE)
MAIN C.B.A
DC9.6V POWER SUPPLY
PG908 (To EVF)
A/V OUT IN
(CC423, CC422, CC421 AND CC420 ONLY)
SENSOR/ PROCESS C.B.A (CC423, CC422, CC421 AND CC420 ONLY)
To PG1014
CONTROL C.B.A
ZOOM SWITCH
YEL
BLK
WHT
YEL
BLK
WHT
DC POWER SUPPLY (DC5V/1A)
BLK
RED
DSP JIG
RS232C CABLE
PERSONAL COMPUTER
COLOR VIDEO MONITOR
YEL
WHT
75Ω

Fig. 5 - Computer Adjustment Set-up/Connection

Computer Adjustment Set-up/Operation Instructions

(Fig. 5)

The digital adjustment program for camcorder is referred to as MAP (Manual Adjustment Program).

Upon completion of MAP, depress the *ESC* key twice to return to the "C" prompt (MS-DOS).

1. Connect the yellow lead wire from the DSP jig to the three (3) pin extension cable.
2. Connect the white lead wire from the DSP jig to the three (3) pin extension cable.
3. Connect the black lead wire from the DSP jig to the three (3) pin extension cable.
4. Connect the other end of the extension cable to PG1014 on the Sensor/Process circuit board.
5. Connect the red wire from the DSP jig to a 5.0VDC +/- 0.1VDC power supply.
6. Supply power to the camcorder and turn on the camcorder.
7. Connect the DSP jig and the personal computer via the RS-232C cable and then start the personal computer.

Note: Refer to the computer instruction manual for the computer start-up procedure.

8. Type MAPIBM 1 using the computer keyboard and press ENTER.

Note: When using a computer with two (2) serial communication (com) ports and the DSP jig is connected to the com. 2 serial connector, type MAPIBM 2 to start the program.

9. As soon as communication has been established, the following menu should appear on the computer screen.

```
*********************************************
***************MODEL SELECT***************
*********************************************

        [1]            XXXXX
        [2]            XXXXX
        [3]            XXXXX
        [4]            XXXXX
        [5]            XXXXX
        [P]            NEXT SELECTION
        [ESC]          END

     PLEASE SELECT THE TYPE OF THE SET
       PRESS [1] - [5] OR [P] OR [ESC]
```

[1] Through [5]:	Select Model
[P]	Switch Model Page
[ESC]	Returns to MS-DOS

Note: If communication is not established, the following initial error message will appear on the computer screen.

```
POWER FAILURE OR CONNECTION ERROR
   MAY OCCUR ON CABLE OR JIG OR
           CAMCORDER
         PRESS ANY KEY
```

If the initial error message appears on the computer screen, check the following areas:

- Confirm that the power supply is connected to the camcorder correctly.
- Confirm that the power supply is connected to the DSP jig correctly.
- Confirm that the RS-232C cable is connected to the DSP jig and the computer correctly.
- Confirm that the DSP jig cables and the three (3) pin extension cable are connected together correctly.
- Confirm that the three (3) pin extension cable is connected to the camcorder correctly.

Select the desired model number from the MODEL SELECT menu using keys [1] through [5].

Note:
- If the desired model is not displayed, press [P] to access the next model menu page.
- When a key other than those displayed in the menu is pressed, the following display will appear.

```
      CANNOT FIND THE DATA FILE
************PRESS ANY KEY***************
```

If the wrong model number is selected, press [ESC] to return to the MODEL SELECT menu. Press the [ESC] key while the MODEL SELECT menu is displayed to return to the MS-DOS prompt.

After the correct model has been selected from the MODEL SELECT menu, the following MANUAL ADJUSTMENT PROGRAM menu will appear on the computer screen.

```
*******************************************
****MANUAL ADJUSTMENT PROGRAM******
*******************************************

        [A]             DATA INITIALIZE
        [B]             ELECTRIC VOLUME
        [C]             ADJUSTMENT
        [D]             AUTOFOCUS
        [E]             SPOT NOISE
        [ESC]            END

   PLEASE SELECT PRESS [A] - [F] OR [ESC]
```

Initializing the EEPROM

Note: Normally it will not be necessary to initialize the EEPROM. This procedure is usually necessary only when the EEPROM on the Sensor/Process circuit board has been replaced or the Sensor Process circuit board has been replaced. Perform adjustments (B) through (F) on the MANUAL ADJUSTMENT PROGRAM MENU after initializing the EEPROM.

1. After selecting the desired model from the MODEL SELECT menu, select [A] from the MANUAL ADJUSTMENT PROGRAM.
2. Press [Y] on the computer keyboard to start the adjustment procedure.

Note: To return to the MANUAL ADJUSTMENT PROGRAM menu after [A] has been selected, press the [N] key on the computer keyboard.

3. After selecting [Y], the following INITIAL SETTING display will appear on the computer monitor screen. Press [Y] each time the display appears.

```
          <<DATA WRITING>>
        START TO SEND DATA
```

4. If there are no abnormalities in the camcorder, the following display will appear on the computer screen when the adjustment procedure is complete.

Note:
- If an error message appears on the computer screen during the adjustment process, refer to the "Error Message Explanation" and the "Electrical Adjustment Troubleshooting Guides" in the "Electrical Adjustment Section" of this service publication to determine the cause.
- Pressing any key after the error message appears will return the computers display to the MANUAL ADJUSTMENT PROGRAM menu.

```
          <<DATA WRITING>>
       PLEASE WAIT A MOMENT
      FINISHED WRITING DATA
           PRESS ANY KEY
```

Press any key to return to the MANUAL ADJUSTMENT PROGRAM menu.

Note: Perform the following adjustments after completing the "Initializing the EEPROM" procedure.

- All Digital/Electric Volume Adjustment Procedures
- Autofocus Adjustment Procedure
- Spot Noise Adjustment Procedure

CDS Offset Adjustment

This adjustment procedures sets the DC offset levels when the AGC is set to minimum and maximum gains.

1. From the ELECTRIC VOLUME menu, select CDS OFFSET [1]. The following display will appear on the computer monitor.

```
*********************************************
          ******ELECTRIC VOLUME******
*********************************************

          [1]    CDS OFFSET
          [2]    SENSOR SUB VOLTAGE
          [3]    CDS SAMPLING PULSE
          [ESC]  RETURN TO MAIN MENU

      PLEASE SELECT  [1] - [3] OR [ESC]
```

2. After the adjustment procedure is completed (approximately 50 seconds later), the following display will appear on the monitor screen.

```
      <<ADJUSTMENT OF CDS OFFSET>>
      PLEASE WAIT AROUND 50 SEC.
```

Note: If an error message appears on the computer screen during the adjustment process, refer to the "Error Message Explanation" and the "Electrical Adjustment Troubleshooting Guides " in the "Electrical Adjustment Section" of this service publication to determine the cause.

```
      <<ADJUSTMENT OF CDS OFFSET>>
         FINISHED WRITING DATA
          ADJUSTMENT FINISHED
             PRESS ANY KEY
```

3. Press any key to return to the ELECTRIC VOLUME menu.
4. Important: Turn the camcorder power off for 5 seconds and on again.
5. Press any key to return to the ELECTRIC VOLUME menu.

Sensor Sub Voltage Adjustment

This adjustment procedure sets the level of the bias voltage of the CCD sensor.

1. Aim the camcorder at the gray scale chart and position the chart so that the gray scale chart fills the TV/monitor screen. Adjust the location of the light so that the chart is evenly lighted at a color temperature of 3,200 degrees kelvin.
2. From the ELECTRIC VOLUME menu, select SENSOR DRIVE PULSE & SUB VOLTAGE [2]. The following display will appear on the computer monitor.

```
      <<ADJUSTMENT OF SUB VOLTAGE/>>
          <<NOW ADJUSTING>>
```

3. A few seconds later the following display will appear on the computer monitor.

Note: If an error message appears on the computer screen during the adjustment process, refer to the "Error Message Explanation" and the "Electrical Adjustment Troubleshooting Guides " in the "Electrical Adjustment Section" of this service publication to determine the cause.

```
  <<ADJUSTMENT OF SENSOR SUB VOLTAGE>>
         FINISHED WRITING DATA
         ADJUSTMENT COMPLETED
             PRESS ANY KEY
```

4. Press any key to return to the ELECTRIC VOLUME menu.

CDS Sampling Pulse Adjustment

1. From the ELECTRIC VOLUME menu, select CDS SAMPLING PULSE [3]. The following display will appear on the computer monitor.

```
  <<ADJUSTMENT OF CDS SAMPLING PULSE>>
          <<NOW ADJUSTING>>
```

2. A few seconds later the following display will appear on the computer monitor.

Continued >

```
<<ADJUSTMENT OF CDS SAMPLING PULSE>>
        FINISHED WRITING DATA
        ADJUSTMENT COMPLETED
           PRESS ANY KEY
```

3. Press any key to return to the ELECTRIC VOLUME menu.

Auto Iris Control Adjustment

This adjustment procedure sets the iris control data.

Note:
- If the CCD image sensor, the EEPROM or components in the autofocus circuit have been replaced, it is necessary to perform the autofocus adjustments before performing the "Auto Iris Control Adjustment Procedure".
- Always perform the "Knee Adjustment Procedure" immediately following the completion of the "Auto Iris Control Adjustment Procedure".

1. Aim the camcorder at the gray scale chart and position the chart so that it fills the TV/monitor screen. Adjust the location of the light so that the chart is evenly lighted with 2,500 lux.

```
*********************************************
****MANUAL ADJUSTMENT PROGRAM******
*********************************************

        [A]             DATA INITIALIZE
        [B]             ELECTRIC VOLUME
        [C]             ADJUSTMENT
        [D]             AUTOFOCUS
        [E]             SPOT NOISE
        [ESC]           END

   PLEASE SELECT THE TYPE OF THE SET
        PRESS [A] - [E] OR [ESC]
```

2. From the MANUAL ADJUSTMENT PROGRAM shown above, select ADJUSTMENT [C].
3. The following menu will appear on the computer monitor.

```
*********************************************
           ****ADJUSTMENT******
*********************************************

        [1]             AUTO IRIS CONTROL
        [2]             KNEE
        [3]             MATRIX
        [4]             WHITE BALANCE
        [5]             CHROMA GAIN
        [ESC]           RETURN TO MAIN
                        MENU
     PLEASE SELECT  [1] - [5] OR [ESC]
```

4. Select AUTO IRIS CONTROL [1] from the ADJUSTMENT menu. The following display will appear on the computer monitor screen.

```
<ADJUSTMENT OF IRIS OPEN AND IRIS CLOSE>

      PLEASE WAIT AROUND 10 SEC.
```

Note: If an error message appears on the computer screen during the adjustment process, refer to the "Error Message Explanation" and the "Electrical Adjustment Troubleshooting Guides " in the "Electrical Adjustment Section" of this service publication to determine the cause.

5. Within approximately 10 seconds the following display will appear on the computer monitor screen.

```
<ADJUSTMENT OF IRIS OPEN AND IRIS CLOSE>
       PLEASE WAIT AROUND 10SEC.
       DATA WRITTEN INTO EEPROM
         ADJUSTMENT FINISHED
            PRESS ANY KEY
```

6. Press any key and the display on the computer monitor will change to the following.

```
      <<ADJUSTMENT OF IRIS>>
   PLEASE WAIT AROUND 20 SEC.
```

```
<<ADJUSTMENT IRIS>>
PLEASE WAIT AROUND 20 SEC

ROUGH ADJUSTMENT:          XX TIMES
FINE ADJUSTMENT:           XX TIMES

ADJUSTMENT FINISHED
PRESS ANY KEY
```

Note: With some units, the ROUGH ADJUSTMENT: XX does not appear. This is a normal condition. Continue with the adjustment.

7. Press any key and the display will change as follows.

```
<<ADJUSTMENT OF HALL CURVE>>
PLEASE WAIT AROUND 30 SEC.
```

8. After approximately 30 seconds, the display will change to the following.

```
<<ADJUSTMENT OF HALL CURVE>>
PLEASE WAIT AROUND 30 SEC.
                   *
ADJUSTMENT POINT 0 1 2 3 4 5 6 7 8 9 A B C
```

9. The adjustment point, indicated by a flashing (*), will appear over each adjustment point on the computer display as the adjustment proceeds. After approximately 30 seconds, the display will change as follows.

```
<<ADJUSTMENT OF HALL CURVE>>
PLEASE WAIT AROUND 30 SEC.
                 * * * * * * * * * * * * *
ADJUSTMENT POINT 0 1 2 3 4 5 6 7 8 9 A B C
DATA WRITTEN INTO EEPROM
ADJUSTMENT FINISHED
PRESS ANY KEY
```

10. Press any key to return to the ADJUSTMENT menu.
11. Important: Turn the camcorder power off for 5 seconds and then on again.
12. Perform the "Knee Adjustment Procedure".

Knee Adjustment Procedure (Fig. 6)

Always perform the "Iris Control Adjustment Procedure" before performing the "Knee Adjustment Procedure".

1. Aim the camcorder at the gray scale chart and position the chart so that it fills the TV/monitor screen. Adjust the location of the light so that the chart is evenly lighted with 2,500 lux.
2. Connect video output (A/V OUT) to an oscilloscope (terminate in 75 ohms).
3. Trigger the oscilloscope internally.
4. From the ADJUSTMENT menu, select KNEE [2]. The following display will appear on the computer monitor screen.

```
****KNEE ADJUSTMENT**** STEP 1
*THIS ADJUSTMENT ONLY NEEDED AFTER
REPLACING IC1101 OR IC1107.*

*THE [1] IRIS CONTROL ADJUSTMENT SHOULD
HAVE JUST BEEN COMPLETED BEFORE
PERFORMING THE FOLLOWING KNEE
ADJUSTMENT PROCEDURE.*

PLEASE POINT AT THE CHART AND PRESS THE
FOLLOWING KEY

RETURN TO MENU                 [ESC]
GO TO NEXT STEP                [ENTER]
```

5. Press [ENTER] to proceed to the next step. The display will change as follows.

```
<<KNEE ADJUSTMENT>> STEP 1
<<PLEASE WAIT A MOMENT>>
```

```
<<KNEE ADJUSTMENT>> STEP 2
SET LUMINANCE LEVEL TO 100 (+/-5) IRE OR
715 (+/-35mVp-p)
ROUGH ADJUSTMENT
[U]                             UP
[D]                             DOWN

FINE ADJUSTMENT
[Ctrl] + [U]                    UP
[Ctrl] + [D]                    DOWN

[ENTER]                         DECISION
```

6. Using the ROUGH ADJUSTMENT controls ([U] and [D]), adjust the level of the waveform displayed on the oscilloscope to 715mVp-p.
7. Using the FINE ADJUSTMENT controls ([Ctrl] + [U] and [Ctrl] + [D]), adjust the amplitude of the waveform displayed on the oscilloscope to 715mVp-p +/- 35mVp-p.
8. Press [ENTER] to proceed to the next step. The following display will appear on the computer monitor screen.

Note: If an error message appears on the computer screen during the adjustment process, refer to the "Error Message Explanation" and the "Electrical Adjustment Troubleshooting Guides " in the "Electrical Adjustment Section" of this service publication to determine the cause.

```
        <<KNEE ADJUSTMENT>> STEP 3
 ADJUST THE LUMINANCE LEVEL TO MATCH
         THE LEVEL FROM STEP 2
ROUGH ADJUSTMENT
[U]                         UP
[D]                         DOWN

FINE ADJUSTMENT
[Ctrl] + [U]                UP
[Ctrl] + [D]                DOWN

[ENTER]                     DECISION
```

9. Using the ROUGH ADJUSTMENT controls ([U] and [D], adjust the level of the waveform displayed on the oscilloscope as close as possible to the level set in step 2.

Note: If needed, press key [C] on the computer keyboard to display the exact level set in step 2. The display will appear as follows.

```
         <<KNEE ADJUSTMENT>> STEP 3
 WAVEFORM ON THE OSCILLOSCOPE IS NOW
 DISPLAYING AMPLITUDE AS SET IN STEP 2.

   PRESS [C] TO RETURN TO STEP 3 MENU
```

10. Using the FINE ADJUSTMENT controls ([Ctrl] + [U] and [Ctrl] + [D]), adjust the amplitude of the waveform displayed on the oscilloscope to the level set in step 2 (+/- 10mVp-p).
11. Press the [C] key. The following display will appear on the computer monitor screen.

```
     <<KNEE ADJUSTMENT>>
    WRITING EEPROM NOW
```

12. Press [ENTER] to proceed to the next step. The following display will appear on the computer monitor screen.

```
     <<KNEE ADJUSTMENT>>
            END
       PRESS ANY KEY
```

13. Press any key to return to the ADJUSTMENT menu.

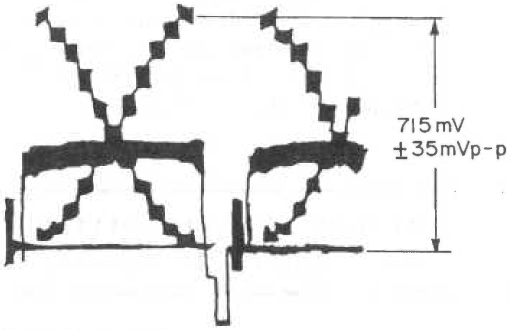

Fig. 6 - Knee Adjustment

Matrix Adjustment (Figs. 7, 8)

This adjustment procedure compensates for unevenness in the chroma signal.

1. Aim the camcorder at the color chart (black, blue and yellow sections only as shown in Fig. 7) and adjust the location of the light so that the chart is evenly lighted at a color temperature of 3,200 degrees kelvin.
2. Connect video output (A/V OUT) to an oscilloscope (terminate in 75 ohms).
3. Trigger the oscilloscope internally.
4. From the ADJUSTMENT menu, select MATRIX [3]. The following display will appear on the computer monitor screen.

```
   <<ADJUSTMENT OF BLUE MATRIX>>

ROUGH ADJUSTMENT
[U]                    UP
[D]                    DOWN

FINE ADJUSTMENT
[Ctrl] + [U]           UP
[Ctrl] + [D]           DOWN

[ENTER]                SAVE AND RETURN
                       TO MENU
[ESC]                  QUIT
```

5. Using the ROUGH ADJUSTMENT, press the [D] key on the computer keyboard to minimize the yellow signal level (Fig. 8).
6. Using the ROUGH ADJUSTMENT, press the [U] key on the computer keyboard to adjust the ratio of the yellow to blue signals to 5:8 (Fig. 8).
7. Using the FINE ADJUSTMENT controls ([Ctrl] + [U] and [Ctrl] + [D]), adjust the ratio of the yellow to blue signals to 5:8 (Fig. 8).
8. Press the [ENTER] key. The following display will appear on the computer monitor screen.

Note: If an error message appears on the computer screen during the adjustment process, refer to the "Error Message Explanation" and the "Electrical Adjustment Troubleshooting Guides " in the "Electrical Adjustment Section" of this service publication to determine the cause.

<<ADJUSTMENT OF BLUE MATRIX>>
DATA WRITING TO EEPROM

<<ADJUSTMENT OF BLUE MATRIX>>
ADJUSTMENT FINISHED
PRESS ANY KEY

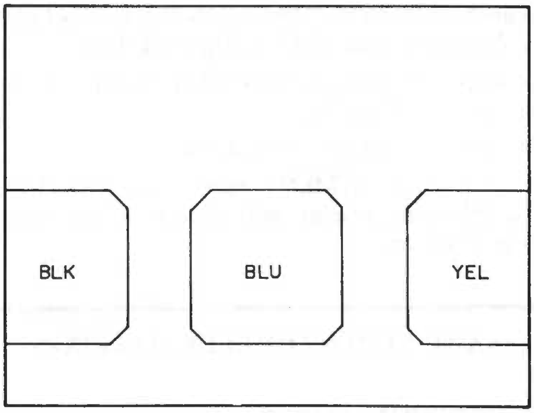

Fig. 7 - Matrix Adjustment

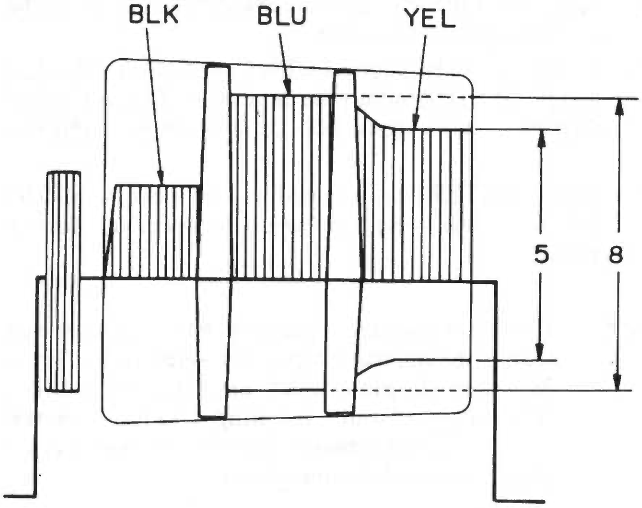

Fig. 8 - Matrix Adjustment

White Balance Adjustment

This adjustment procedure sets the white balance at a specific color temperature. This setting becomes the reference for the auto white balance circuit.

1. Aim the camcorder at the gray scale chart and position the chart so that it fills the TV/monitor screen. Adjust the location of the light so that the chart is evenly lighted at a color temperature of 3,200 degrees kelvin.
2. Attach a C12 color conversion filter to the camcorder lens. Refer to the "Replacement Parts List" for the C12 filter stock number.
3. From the ADJUSTMENT menu, select WHITE BALANCE [4]. The following display will appear on the computer monitor screen.

Note: If an error message appears on the computer screen during the adjustment process, refer to the "Error Message Explanation" and the "Electrical Adjustment Troubleshooting Guides " in the "Electrical Adjustment Section" of this service publication to determine the cause.

<<WHITE BALANCE ADJUSTMENT>>
INPUT DATA OF OFFSET FOR R - B --> 08

4. Using the computer keyboard, press [0], [8] to input the data.
5. Press [ENTER]. The following display will appear on the computer monitor screen.

<<WHITE BALANCE ADJUSTMENT>>
INPUT DATA OF OFFSET FOR MG - G --> 08

Continued >

6. Using the computer keyboard, press [0], [8] to input the data.
7. Press [ENTER]. The following display will appear on the computer monitor screen.

```
<<WHITE BALANCE ADJUSTMENT>>
PLEASE WAIT A MOMENT
```

```
<<WHITE BALANCE ADJUSTMENT>>
ADJUSTMENT COMPLETED
COMPLETED EEPROM WRITE
PRESS ANY KEY
```

8. Press any key to return to the ADJUSTMENT menu.

Chroma Gain Adjustment (Fig. 9)

This adjustment sets the color saturation at a specific color temperature.

1. Aim the camcorder at the color chart and adjust the location of the light so that the chart is evenly lighted at a color temperature of 3,200 degrees kelvin.
2. Attach a C12 color conversion filter to the camcorder lens. Refer to the "Replacement Parts List" for the C12 filter stock number.
3. Connect the video output (A/V output) to a vectorscope and terminate the video in 75 ohms.
4. From the ADJUSTMENT menu, select CHROMA GAIN [5]. The following display will appear on the computer monitor screen.

```
<<ADJUSTMENT OF CHROMA GAIN>>

ROUGH ADJUSTMENT
[U]                       CHROMA GAIN UP
[D]                       CHROMA GAIN
                          DOWN

FINE ADJUSTMENT
[Ctrl] + [U]              CHROMA GAIN UP
[Ctrl] + [D]              CHROMA GAIN
                          DOWN

[ENTER]                   SAVE AND RETURN
                          TO MENU
[ESC]                     QUIT
```

Note: If an error message appears on the computer screen during the adjustment process, refer to the "Error Message Explanation" and the "Electrical Adjustment Troubleshooting Guides" in the "Electrical Adjustment Section" of this service publication to determine the cause.

5. Using the ROUGH ADJUSTMENT, press the [U] and [D] keys on the computer keyboard to adjust the red vector to approximately 140% of the burst level.
6. Using the FINE ADJUSTMENT controls ([Ctrl] + [U] and [Ctrl] + [D]), adjust the amplitude of the red vector so that it is 140% +/- 5% of the burst level signal.
7. Press the [ENTER] key. The following display will appear on the computer monitor screen.

```
<<ADJUSTMENT OF CHROMA GAIN>>
DATA WRITING  EEPROM
```

```
<<ADJUSTMENT OF CHROMA GAIN>>
ADJUSTMENT FINISHED
PRESS ANY KEY
```

8. Press any key to return to the ADJUSTMENT menu.

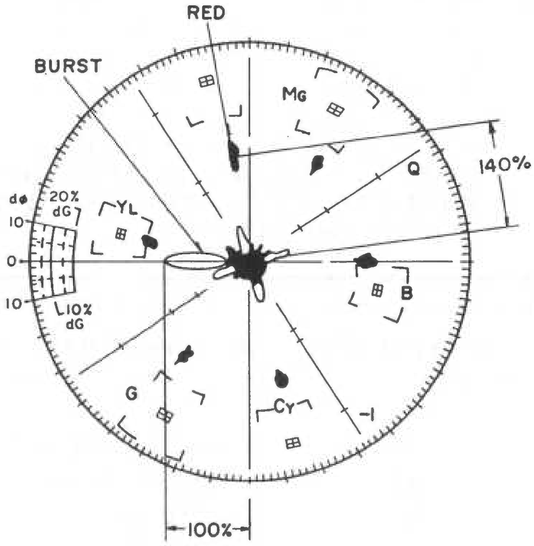

Fig. 9 - Chroma Gain Adjustment

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ELECTRICAL ADJUSTMENTS (Camera Section Continued)

Autofocus Adjustment Procedures

Perform the autofocus adjustment procedures whenever the EEPROM has been initialized or when parts in the autofocus circuit have been replaced.

Before beginning the autofocus adjustment procedures, remove the case and connect the camcorder/test equipment as shown in Fig. 5.

All autofocus adjustment procedures are performed through the use of an IBM® compatible personal computer and a special DSP jig. Refer to the "Computer Adjustment Setup/Operation Instructions" for assistance. Refer to the "Replacement Parts List" for the extension cables, the adjustment software and the DSP jig stock numbers.

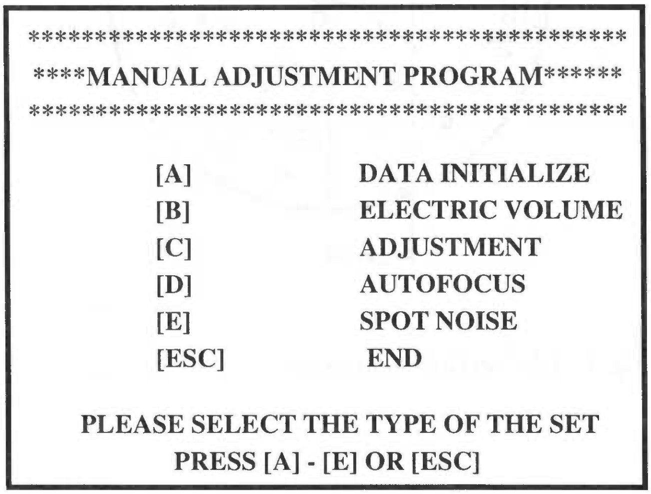
Note: If an error message appears on the computer screen during the adjustment process, refer to the "Error Message Explanation" and the "Electrical Adjustment Troubleshooting Guides" in the "Electrical Adjustment Section" of this service publication to determine the cause.

Zoom/Focus Tracking Adjustment

This adjustment procedure calibrates the focus operation throughout the complete zoom range.

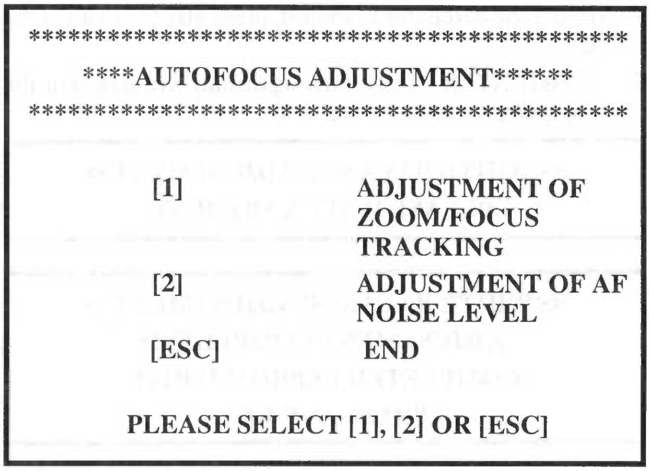
1. Position the backfocus chart 1.5 meters +/- 5mm (59 1/16 inch +/- 3/16 inch) from the lens surface. Refer to the "Replacement Parts List" for the backfocus chart stock number.
2. Illuminate the chart with 200 - 400 lux.
3. Set the *Focus* switch on the camcorder to the AUTO position.

Note: Measure the distance between the lens and the chart precisely. Make sure that the chart is parallel to the lens surface. Position the chart so that the center of the chart appears in the center of the video monitor when the zoom lens is in either the wide angle or the telephoto position. **WHEN THE ADJUSTMENT PROCESS IS COMPLETE, TURN OFF THE POWER TO THE CAMCORDER AND THEN TURN IT BACK ON AGAIN.**



```
**********************************************
****MANUAL ADJUSTMENT PROGRAM******
**********************************************

[A]          DATA INITIALIZE
[B]          ELECTRIC VOLUME
[C]          ADJUSTMENT
[D]          AUTOFOCUS
[E]          SPOT NOISE
[ESC]        END

PLEASE SELECT THE TYPE OF THE SET
PRESS [A] - [E] OR [ESC]
```

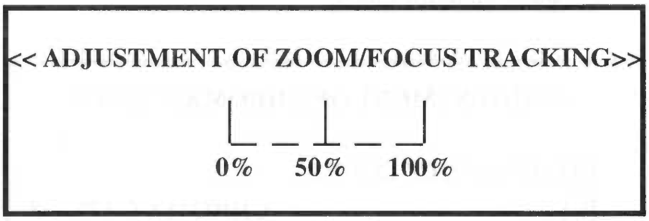
4. From the MANUAL ADJUSTMENT PROGRAM menu shown above, select AUTOFOCUS [D]. The following display will appear on the computer monitor.



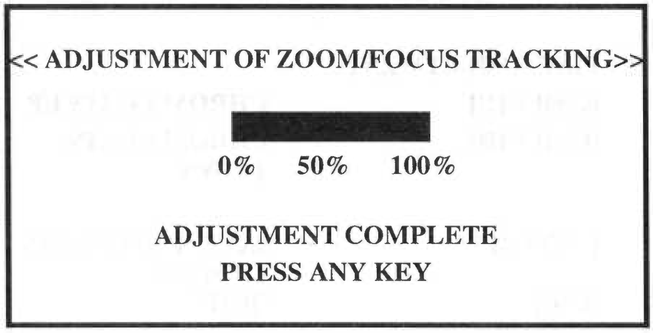
```
**********************************************
****AUTOFOCUS ADJUSTMENT******
**********************************************

[1]          ADJUSTMENT OF
             ZOOM/FOCUS
             TRACKING
[2]          ADJUSTMENT OF AF
             NOISE LEVEL
[ESC]        END

PLEASE SELECT [1], [2] OR [ESC]
```

5. Select ADJUSTMENT OF ZOOM/FOCUS TRACKING [1] from the AUTOFOCUS ADJUSTMENT menu. The following displays will appear on the computer monitor screen as the adjustment process is performed by the computer.

Note:
- The adjustment process takes approximately two (2) minutes to complete.
- Make sure that nothing comes between the lens and the chart during the adjustment period. If the image is interrupted, repeat the adjustment process from the beginning.



```
<< ADJUSTMENT OF ZOOM/FOCUS TRACKING>>

0%     50%     100%
```



```
<< ADJUSTMENT OF ZOOM/FOCUS TRACKING>>

0%     50%     100%

ADJUSTMENT COMPLETE
PRESS ANY KEY
```

6. Press any key to return to the AUTOFOCUS menu.

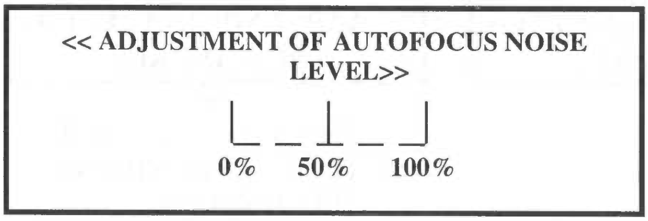
Autofocus Noise Level Adjustment

This adjustment procedure measures the internal autofocus circuit noise.

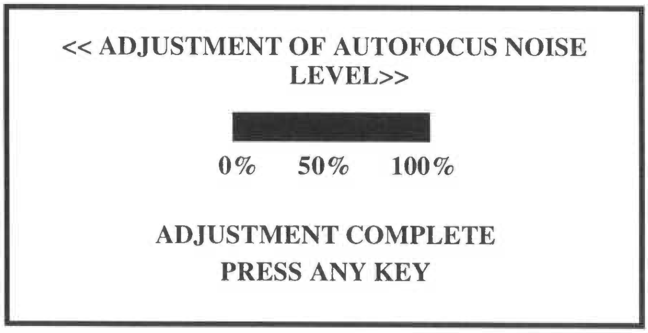
1. Make sure that the *Focus* switch is in the AUTO position.
2. Aim the camcorder at a white piece of paper at a distance of 10cm (3 15/16 inch) maximum.
3. Adjust the location of the light so that the chart is evenly lighted with 2,500 lux.
4. From the MANUAL ADJUSTMENT PROGRAM menu, select AUTOFOCUS [D]. The following display will appear on the computer monitor.

```
*********************************************
        ****AUTOFOCUS ADJUSTMENT******
*********************************************

     [1]              ADJUSTMENT OF
                      ZOOM/FOCUS
                      TRACKING
     [2]              ADJUSTMENT OF AF
                      NOISE LEVEL
     [ESC]            END

      PLEASE SELECT [1], [2] OR [ESC]
```

5. Select ADJUSTMENT OF AF NOISE LEVEL [2] from the AUTOFOCUS ADJUSTMENT menu. The following displays will appear on the computer monitor screen as the adjustment process is performed by the computer. The procedure will be completed in approximately 30 seconds.



```
<< ADJUSTMENT OF AUTOFOCUS NOISE
            LEVEL>>

       0%     50%     100%
```



```
<< ADJUSTMENT OF AUTOFOCUS NOISE
            LEVEL>>

       0%     50%     100%

     ADJUSTMENT COMPLETE
        PRESS ANY KEY
```

6. Press any key to return to the AUTOFOCUS ADJUSTMENT menu.

Spot Noise Adjustment Procedure

Occasionally some camcorders will display a pixel defect. The symptoms of this defect can be seen when the lens is capped and the power to the camcorder is on. The defect appears as white dots on the screen when the camcorder lens is capped. This phenomenon is referred to as "spot noise".

This adjustment procedure is only necessary for camcorders displaying the "spot noise" symptom, the CCD image sensor has been replaced or if the Sensor/Process circuit board (EEPROM) has been replaced.

Note: If an error message appears on the computer screen during the adjustment process, refer to the "Error Message Explanation" and the "Electrical Adjustment Troubleshooting Guides" in the "Electrical Adjustment Section" of this service publication to determine the cause.

Before beginning the spot noise adjustment procedure, remove the case and connect the camcorder/test equipment as shown in Fig. 5.

The spot noise adjustment procedure is performed through the use of an IBM® compatible personal computer and a special DSP jig. Refer to the "Computer Adjustment Setup/ Operation Instructions" for assistance. Refer to the "Replacement Parts List" for the extension cables, the adjustment software and the DSP jig stock numbers.

Continued >

```
**********************************************
****MANUAL ADJUSTMENT PROGRAM******
**********************************************
            [A]          DATA INITIALIZE
            [B]          ELECTRIC VOLUME
            [C]          ADJUSTMENT
            [D]          AUTOFOCUS
            [E]          SPOT NOISE
            [ESC]         END

      PLEASE SELECT THE TYPE OF THE SET
      PRESS [A],  [B], [C], [D], [F] OR [ESC]
```

1. With the camera lens capped, select SPOT NOISE [F] from the MANUAL ADJUSTMENT PROGRAM menu shown above. The following display will appear on the computer monitor.

```
SEARCHING SPOT NOISE NOW.
PLEASE WAIT A MOMENT.
```

Note: Depending on the number of spot noise occurrences (one instance, several instances or no spot noise detected), the adjustment display will be slightly different.

2. If display "C" appears on the computer monitor screen, no spot noise has been detected. Press any key to return to the MANUAL ADJUSTMENT PROGRAM menu.
3. If displays "A" or "B" appear on the computer monitor screen, either a single spot was detected (display "A") or several spots were detected (display "B"). In either case, press any key to proceed with the adjustment procedure. The computer will move to the next display.

(Display "A")

```
********************************
**SPOT NOISE COMPENSATE**
********************************
   A SPOT NOISE DETECTED
      PRESS ANY KEY
```

(Display "B")

```
********************************
**SPOT NOISE COMPENSATE**
********************************
   A SPOT NOISE DETECTED
      PRESS ANY KEY
```

(Display "C")

```
********************************
**SPOT NOISE COMPENSATE**
********************************
   A SPOT NOISE DETECTED
      PRESS ANY KEY
```

Press any key to continue with the adjustment.

Press any key to return to the MANUAL ADJUSTMENT PROGRAM menu.

Continued >

(Continued)

```
******************************
**SPOT NOISE COMPENSATE**
******************************
CAN YOU SEE THE BLINKING
CURSOR? (Y/N)
```

4. A blinking (flashing) cursor will appear on the computer monitor screen indicating the location of the "spot noise". One of the following two displays will appear on the screen.
5. When display "D" appears on the computer monitor screen, confirm that the "spot noise" has disappeared. If the "spot noise" is still present, press the space bar (key) on the computer keyboard to eliminate the "spot noise".
6. Press the ENTER key. The computer monitor display will change to display "F" shown below.
7. Press any key to return to the MANUAL ADJUSTMENT PROGRAM menu.

(Display "D")

```
******************************
**SPOT NOISE COMPENSATE**
******************************
LOOK AT THE CURSOR POINT
WHILE YOU CAN SEE THE SPOT
NOISE, PRESS SPACE KEY.
IF THE SPOT NOISE CLEARS, THEN PRESS
ENTER KEY
```

(Display "E")

```
******************************
**SPOT NOISE COMPENSATE**
******************************
THIS SPOT NOISE IS IN THE BLANKING
AREA OF THE TV

PRESS ANY KEY
```

(Display "F")

```
******************************
**SPOT NOISE COMPENSATE**
******************************
COMPLETE
PRESS ANY KEY
```

Electronic Viewfinder (EVF) Output Voltage Adjustment (Fig. 4)

Note: Be sure to set the BRIGHT control (RT2101) to the center position before adjusting the EVF.

Observe:	DVM	
Adjust:	RT2181 (Focus)	EVF CBA

1. Place the *Camera/Off/Video* switch in the CAMERA position.
2. Connect the DVM to PG2104-5 on the color EVF circuit board.
3. Adjust EVF REF. V control (RT2181) so the DVM reads 12.0V ± 0.1V.

Electronic Viewfinder (EVF) Brightness Adjustment Figs. 4, 10)

Observe:	Oscilloscope	
Adjust:	RT2101 (BRIGHT)	EVF

1. Place the *Camera/Off/Video* switch in the CAMERA position.
2. Aim the camera at the gray scale chart and position the chart so that it fills the TV/monitor screen.
3. Connect the oscilloscope to PG2104-4 on the color EVF circuit board. (Fig. 4)
4. Trigger the oscilloscope internally.
5. Set the AC/GND/DC switch of the oscilloscope to the DC mode.
6. Adjust the BRIGHT control (RT2101) so that section (A) in the waveform (Fig. 10) is 2.1V ± 0.05Vp-p.

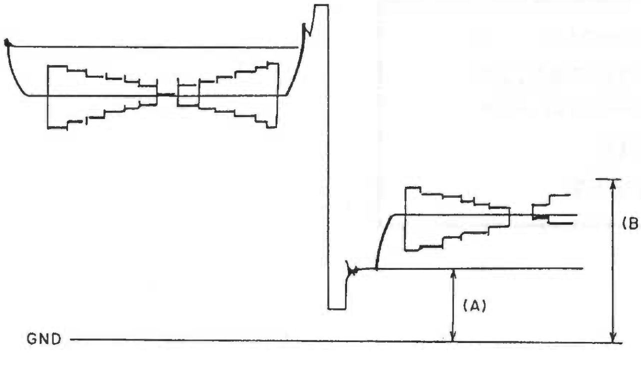


Fig. 10 - Brightness and Contrast Adjustment

Electronic Viewfinder (EVF) Contrast Adjustment (Figs. 4, 10)

Observe:	Oscilloscope	
Adjust:	RT2104 (CONTRAST)	EVF

1. Place the *Camera/Off/Video* switch in the CAMERA position.
2. Aim the camcorder at the gray scale chart and align the chart with the center of the lens.
3. Connect the ocilloscope to PG2104-4 on the color EVF circuit board. (Fig. 4)
4. Trigger the oscilloscope internally.
5. Set the AC/GND/DC switch of the oscilloscope to the DC mode.
6. Adjust the CONTRAST control (RT2104) so that section (B) in Fig. 10 is 4.7V ± 0.05Vp-p.

Electronic Viewfinder (EVF) Sub-Bright Adjustment (Figs. 4, 11)

Observe:	Oscilloscope	
Adjust:	RT2106, RT2105	EVF

1. Place the *Camera/Off/Video* switch in the CAMERA position.
2. Aim the camera at the gray scale chart.
3. Connect channel 1 of the oscilloscope to PG2104-3 on the color EVF circuit board.
4. Connect channel 2 of the oscilloscope to PG2104-4 on the color EVF circuit board. (Fig. 4)
5. Trigger on channel 2 (PG2104-4) and set the oscilloscope to the dual mode.
6. Set the oscilloscope to the DC mode.
7. Adjust the SUB-BRIGHT-B control (RT2106) to make the black levels of channels 1 and 2 the same (within 0.1V). If the waveforms do not match, adjust the waveforms. (Fig 11)

Note: Overlap the waveforms of channel 1 and 2 to make the adjustment easier.

8. Connect channel 1 of the oscilloscope to PG2104-2 on the color EVF circuit board.
9. Adjust the SUB-BRIGHT-R control (RT2105) to make the black levels of channels 1 and 2 the same (within 0.1V). (Fig. 11)

Note: Overlap the waveforms of channel 1 and 2 to make the adjustment easier.

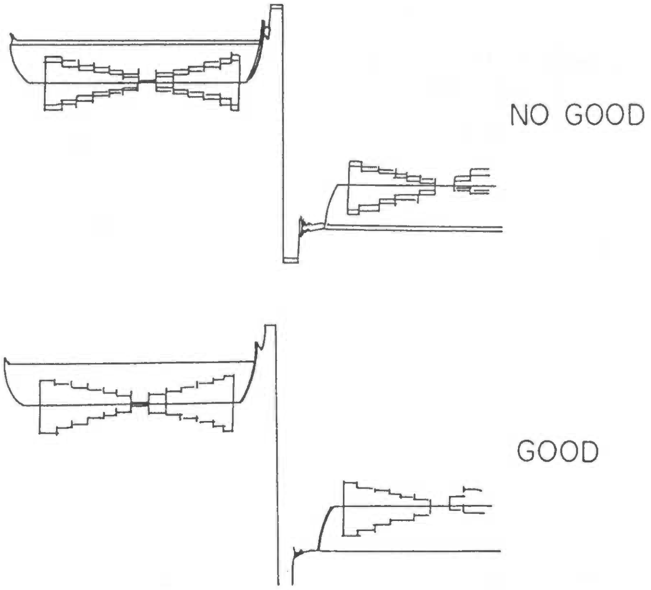


Fig. 11 - EVF Sub-Bright Adjustment

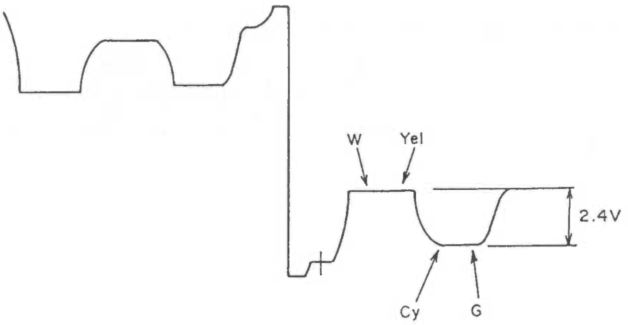


Fig. 12 - EVF Chroma and Tint Level

Electronic Viewfinder (EVF) Chroma Level and Tint Adjustment (Fig. 12)

Observe:	EVF, Oscilloscope	
Adjust:	RT2102, RT2103	EVF CBA

1. Place the *Camera/Off/Video* switch in the CAMERA position.
2. Set the AV IN/OUT switch to the IN position.
3. Input a full color bar signal from the color bar generator.
4. Connect the oscilloscope to PG2104-2 on the color EVF circuit board.
5. Trigger the oscilloscope internally.
6. Adjust the COLOR control (RT2102) to minimize the fluctuations in the waveform.
7. Adjust the TINT control (RT2103) to make the cyan and green levels the same.
8. Adjust the color control (RT2102) so the cyan level is 2.4V±0.1Vp-p lower than the yellow level.

Note: Perform steps 6 and 7 alternately while checking the level differences between cysn and green and between yellow and cyan.

9. Disconnect the color bar generator and aim the camera at an appropriate object (multicolor poster, etc.)
10. Fine adjust the TINT control (RT2103) to optimize the tint of the EVF picture.

ELECTRICAL ADJUSTMENTS (VCR Section)

ADJUSTMENT CONDITIONS

Setting Up (Fig. 13)
Remove the camcorder cases to gain access to the Main circuit board. Connect the camcorder and the color monitor.

Allow the camcorder and the test equipment to warm up for at least 30 minutes prior to making adjustments.

Confirm that the camera section has been correctly adjusted before proceeding with the VCR adjustment procedures.

When using TP204 (video out), be sure to terminate the signal with 75 ohms.

Customer Control Presets

Camera/Off/VCR Switch	VCR
A/V In/Out Switch	OUT

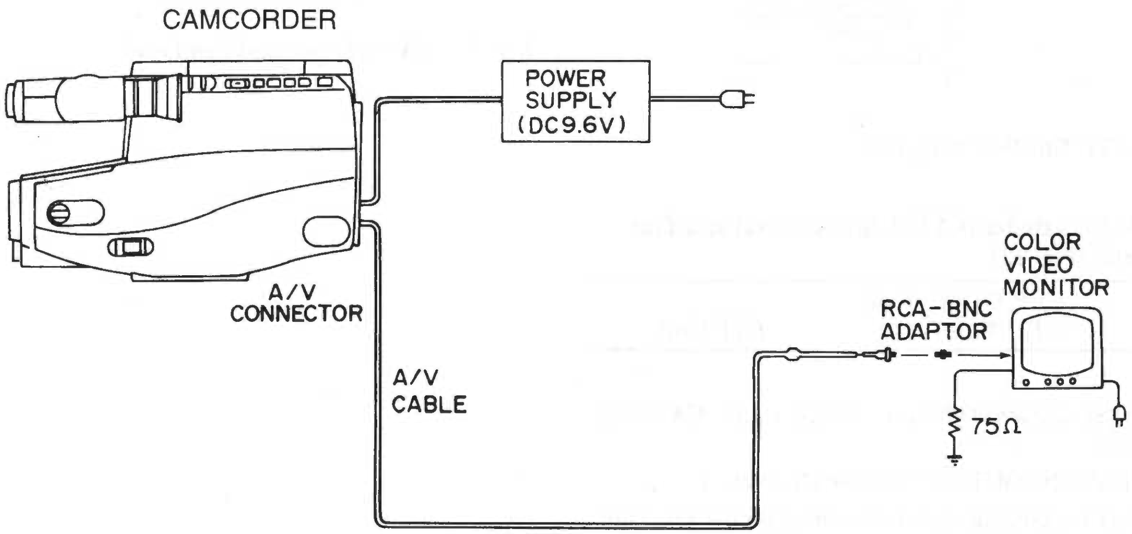


Fig. 13 - VCR Adjustment Setup

Required Test Equipment
The following test equipment is required for adjusting the VCR section.

Oscilloscope - Dual trace, 25MHz bandwidth with channel inversion capability, and 10:1 probe.

Color Video Monitor

Alignment Tape (stock number 192847)

DC Power Supply (9.6V)

ELECTRICAL ADJUSTMENTS (VCR Section Continued)

CIRCUIT BOARD LOCATION

1. Sensor/Process Circuit Board
2. Supply Sensor Circuit board
3. Take-up Sensor Circuit Board
4. Main Circuit Board
5. Control Circuit Board

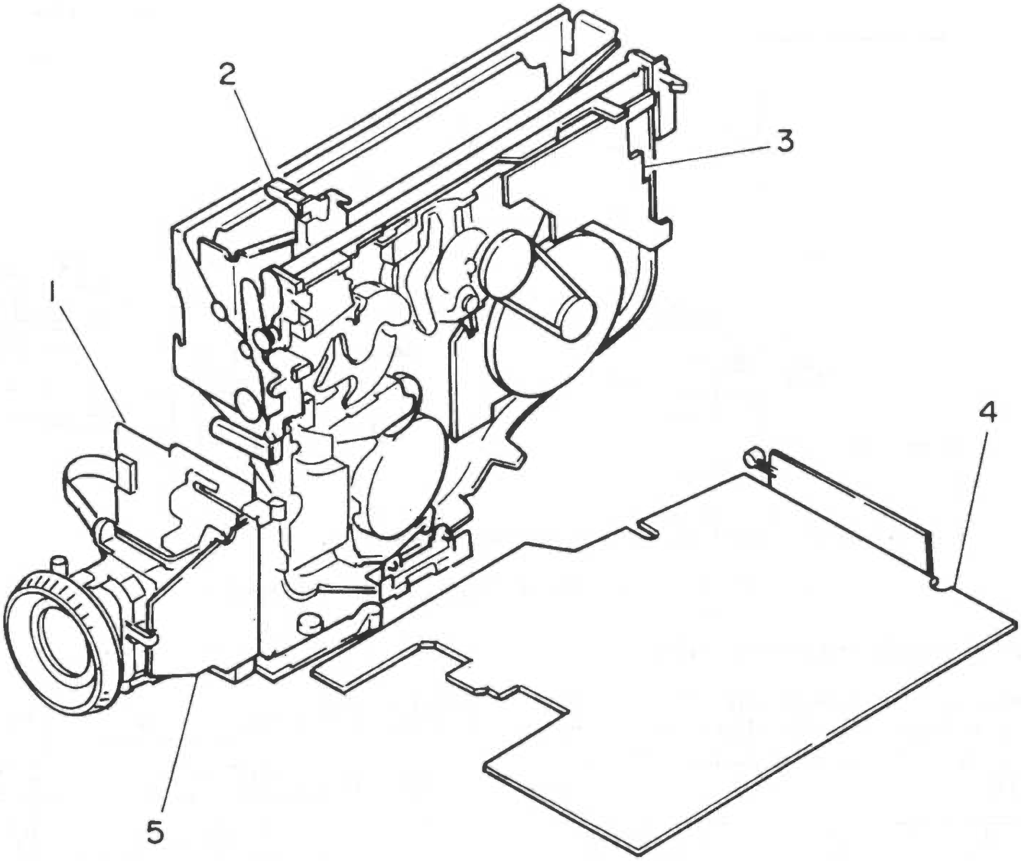


Fig. 14 - Circuit Board Location

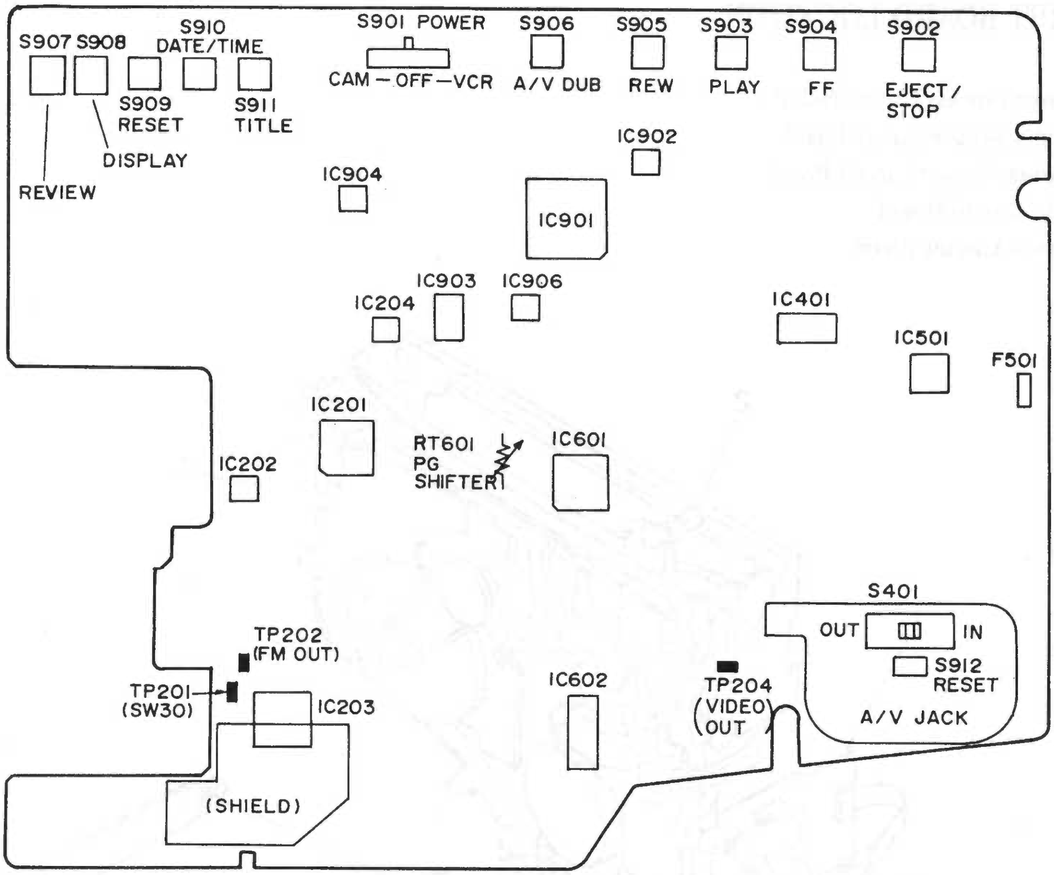

S907 S908
S910
DATE/TIME
S909
RESET
S911
TITLE
DISPLAY
REVIEW
S901 POWER
CAM — OFF — VCR
S906
A/V DUB
S905
REW
S903
PLAY
S904
FF
S902
EJECT/
STOP
IC902
IC904
IC901
IC903
IC906
IC204
IC401
IC501
F501
IC201
IC202
RT601
PG
SHIFTER
IC601
S401
OUT
IN
S912
RESET
A/V JACK
TP202
(FM OUT)
TP201
(SW30)
IC203
IC602
TP204
(VIDEO
OUT
(SHIELD)

Fig. 15 - Main Circuit Board Test Point/Control Location

Pulse Generator (PG) Shifter Adjustment (Fig. 16)

This adjustment procedure sets the video head switching point during playback operation. Misadjustment may cause head switching noise to appear in the picture or may cause vertical instability.

Test Point:	TP204 (Video Out)	Main CBA
	TP201 (SW30Hz)	Main CBA
Observe:	Oscilloscope	
Adjust:	RT601 (PG Shifter)	Main CBA

1. Place the *Camera/Off/VCR* switch in the VCR position.
2. Load the instrument with the color bar alignment tape and place the unit in the playback mode. Refer to the "Replacement Parts List" for the alignment tape stock number.
3. Connect the oscilloscope to TP204 (0.5V per div./50µ sec.). Use TP201 (SW30Hz) to externally trigger the oscilloscope.
4. Set the oscilloscope slope control to (-) slope and adjust the *PG Shifter* control (RT601) so that the trailing edge ofthe SW30Hz signal is positioned 6.5 +/- 0.5 horizontal lines before the start of the channel-1 vertical sync.
5. Set the oscilloscope slope control to (+) slope.
6. Confirm that the leading edge of the SW30Hz signal is positioned 6.5 +/- 0.5 horizontal lines before the start of channel-2 vertical sync.

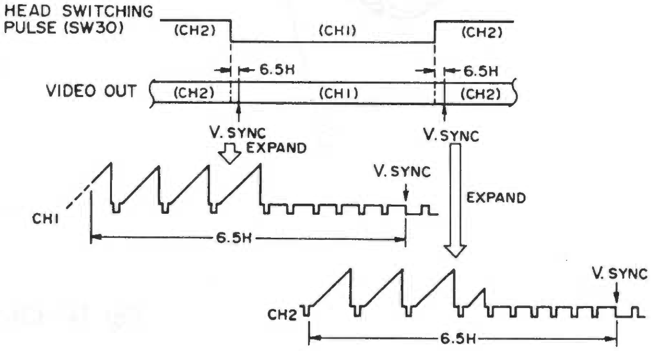

HEAD SWITCHING
PULSE (SW30)
(CH2)
(CH1)
(CH2)
6.5H
6.5H
VIDEO OUT
(CH2)
(CH1)
(CH2)
V. SYNC
EXPAND
V. SYNC
V. SYNC
EXPAND
CH1
6.5H
V. SYNC
CH2
6.5H

Fig. 16 - Pulse Generator (PG) Shifter Adjustment

Note: The waveform of channel 1 and channel 2 may be the opposite depending on the alignment tape.

ELECTRICAL ADJUSTMENTS (AC Adapter/Charger)

ADJUSTMENT CONDITIONS

Setting Up
Remove the AC adapter/charger cases to gain access to the Main circuit board. Connect the AC adapter/charger and the test equipment.

Allow the AC adapter/charger and the test equipment to warm up for at least 30 minutes prior to making adjustments.

Reference Voltage Adjustment (Figs. 17, 18)

This adjustment procedure sets the reference voltage to a specified level.

Test Point:	IC201 pin 3	Main
	C205 (Neg. Lead -)	Main
Observe:	DVM	
Adjust:	VR201 (Ref. Volt.)	Main

1. Make sure there is nothing connected to the AC adapter/charger outputs (unloaded state).
2. Connect the positive lead of the DVM to IC201 pin 3 and the negative lead of the DVM to C204 (negative lead -).
3. Supply 120VAC to the AC adapter/charger and make sure that the power LED is on.
4. Adjust the *Reference Voltage* control (VR201) so that the DVM reads 4.4VDC +/- 0.01VDC.

Customer Control Presets

DC Output (9.6VDC)	Not Connected
VR201	Center Position
VR202	Center Position

Required Test Equipment

The following test equipment is required for adjusting the AC adapter/charger.

Oscilloscope - Dual trace, 25MHz bandwidth with channel inversion capability, and 10:1 probe.

Digital Volt Meter (DVM)

DC Ammeter

DC Power Supply (0~13V/1A)

Diode

Variable Resistor (150 ohm/more than 1.5W)

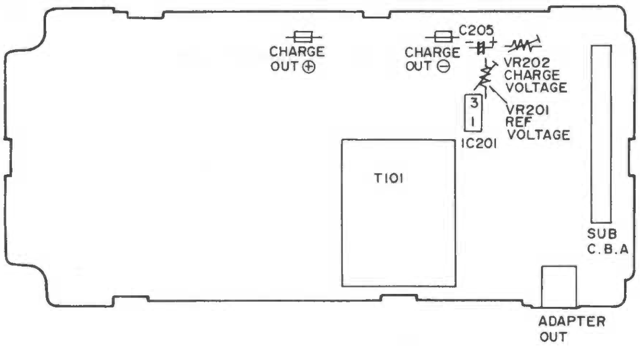

CHARGE OUT ⊕
CHARGE OUT ⊖
C205
VR202 CHARGE VOLTAGE
3
1
VR201 REF VOLTAGE
IC201
T101
SUB C.B.A
ADAPTER OUT

Fig. 17 - AC Adapter/Charger Test Point/Control Location (Component Side)

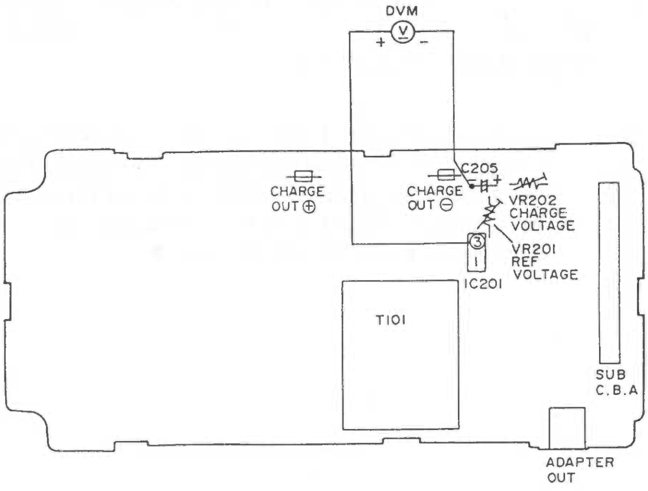

DVM
V
+
-
CHARGE OUT ⊕
CHARGE OUT ⊖
C205
VR202 CHARGE VOLTAGE
3
1
VR201 REF VOLTAGE
IC201
T101
SUB C.B.A
ADAPTER OUT

Fig. 18 - Reference Voltage Adjustment Setup

ELECTRICAL ADJUSTMENTS (AC Adapter/Charger) Continued)

Charge Voltage Adjustment (Fig. 19)

This adjustment procedure sets the charge voltage to a specified level.

Test Point:	Charge Terminals	Main
Observe:	DVM Ammeter Power Supply Variable Resistor	
Adjust:	VR202 (Charge Volt.)	Main

Note: This adjustment should be done very quickly (within 30 seconds) after the AC power is applied.

1. Connect a variable resistor (150 ohms/1.5 watt), the DVM, the DC ammeter and the diode.
2. Adjust the DC power supply so that the voltage on the DVM reads 10.8VDC.
3. Supply 120VAC power to the AC adapter/charger and make sure that the power LED comes on.
4. Adjust the variable resistor, so that the ammeter reads 0.1A.
5. Adjust the *Charge Voltage* control (VR202) so that the DVM reads 12.56VDC +/- 0.03VDC at an ambient temperature of 25 degrees C.

Note: The adjustment level varies with ambient temperature. When the temperature rises or drops by one (1) degree C, the voltage decreases or increases by 20mVDC. Refer to the chart in Fig. 20 to determine the correct voltage level. ■

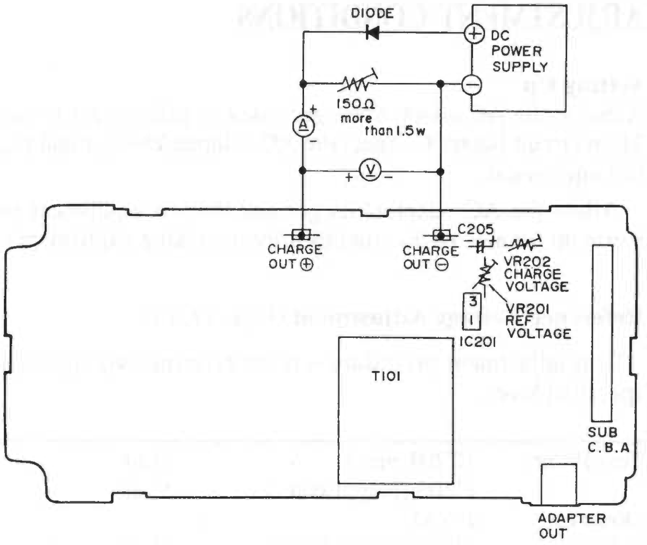

DIODE
DC POWER SUPPLY
+
−
150Ω more than 1.5w
A
V
+
−
CHARGE OUT ⊕
CHARGE OUT ⊖
C205
VR202 CHARGE VOLTAGE
3
VR201 REF VOLTAGE
IC201
T101
SUB C.B.A
ADAPTER OUT

Fig. 19 - Charge Voltage Adjustment Set-up

AMBIENT TEMP.	21^0	23^0	25^0	27^0	29^0	31^0
VOLTAGE LEVEL	12.64V	12.60V	12.56V	12.52V	12.48V	12.44V

Fig. 20 - Charge Voltage Adjustment Chart

ELECTRICAL ADJUSTMENTS (Error Message Explanation)

ERROR MESSAGES (Camera Electronic Volume/Digital Adjustments)

ERROR MESSAGE	COUNTER MEASURE
ERROR OCCURRED. IRIS TROUBLE PRESS ANY KEY	● Confirm that power is applied. ● Confirm the values of the iris drive circuit. ● Check for defective soldering, damage to copper pattern, etc. in the iris circuit. ● Check the Iris Block and replace if necessary.
ERROR OCCURRED ON dax ADJUSTMENT PRESS ANY KEY	● Confirm the values of the hall amp circuit. ● Check for defective soldering, damage to copper pattern, etc. in the hall amp. circuit.
D RANGE OVER. ERROR ON dax ADJUSTMENT PRESS ANY KEY	● Confirm the values of the hall amp. circuit. ● Check for defective soldering, damage to copper pattern, etc. in the hall amp. circuit.
ERROR OCCURRED ON da0 AND da1 ADJUSTMENT PRESS ANY KEY	● Confirm the values of the hall amp. circuit and all of its peripheral circuits. ● Check for defective soldering, damage to copper pattern, etc. in the hall amp. circuit and all of its peripheral circuits.
FILE NOT FOUND !!!! PRESS ANY KEY	● The adjustment program (file) cannot be found. ● Check the adjustment software floppy disk and replace if necessary.
FILE OPEN ERROR !!!! PRESS ANY KEY	● The adjustment program (file) will not start. ● Check the adjustment software floppy disk and replace if necessary.
ERROR OCCURRED ON C DUTY ADJUSTMENT PRESS ANY KEY	● Confirm the values of the Iris Drive circuit. ● Check for defective soldering, damage to copper pattern, etc. in the iris circuit.
ERROR OCCURRED ON FDET ADJUSTMENT PRESS ANY KEY	● Reapply power and readjust. ● Confirm the values of the hall amp. circuit. ● Check for defective soldering, damage to copper pattern, etc. in the iris circuit.

Continued >

ELECTRICAL ADJUSTMENTS (Error Message Explanation)

ERROR MESSAGES (Camera Electronic Volume/Digital Adjustments Continued)

ERROR MESSAGE	COUNTER MEASURE
ERROR OCCURRED. ZOOM DOES NOT WORK PRESS ANY KEY	● Reapply power to the camcorder and then readjust.
TOO BRIGHT PRESS ANY KEY	● Subject too bright. ● Move the camera further away from the light box.
SATURATION ERROR. TOO BRIGHT. PRESS ANY KEY	● The subject is too bright. ● Move the camera further away from the light box.
CAN'T ADJUST WHITE BALANCE PLEASE RETRY PRESS ANY KEY	● The subject is too bright or too dark. ● Check the light box. ● Move the camera closer to or further away from the light box. ● Reapply power to the camcorder and then readjust.
TOO DARK PRESS ANY KEY	● The subject is too dark. ● Check the light box. ● Move the camera closer to the light box.
D RANGE OVER ERROR ON HALL AMP IRIS CANNOT OPEN ANY MORE PRESS ANY KEY	● Reapply power to the camcorder and then readjust. ● The subject is too dark. ● Check the light box. ● Move the camera closer to the light box. ● Check the values in the hall amp circuit. ● Check for defective soldering, damage to copper pattern, etc. in the hall amp. circuit.

ERROR MESSAGES (Autofocus Adjustments)

ERROR MESSAGE	COUNTER MEASURE
CAN'T COMPLETE AF ADJUSTMENT	● If the error message appears even when the adjustment is performed two (2) to three (3) times, the autofocus circuit system is defective. ● Refer to number "(2) No Zoom Operation" in the "Electrical Adjustment Troubleshooting Guide Section" of this service manual.
TIME OUT ERROR ON AF ADJUSTMENT	● If the error message appears even when the adjustment is performed two (2) to three (3) times, the autofocus circuit system is defective. ● Refer to number "(2) No Zoom Operation" in the "Electrical Adjustment Troubleshooting Guide Section" of this service manual.
AF LIMIT OVER	● If the error message appears even when the adjustment is performed two (2) to three (3) times, the autofocus circuit system is defective. ● Refer to number "(2) No Zoom Operation" in the "Electrical Adjustment Troubleshooting Guide Section" of this service manual.
OUT OF RANGE	● Error in communication between the DSP microprocessor and the autofocus microprocessor. ● Check the connections between the DSP jig and the camcorder. ● The electronic variable resistor adjustments or the digital adjustments are adjusted incorrectly.
CANNOT OPEN THE FILE PRESS ANY KEY	● The Data Initialize program does not start. ● Check the adjustment software floppy disk and replace if necessary.
TIME OUT ERROR ON AF STEP	● If the error message appears even when the adjustment is performed two (2) to three (3) times, the autofocus circuit system is defective. ● Refer to number "(1) No Lens Focus Operation" in the "Electrical Adjustment Troubleshooting Guide Section" of this service manual.
TIME OUT ERROR ON ZOOM	● If the error message appears even when the adjustment is performed two (2) to three (3) times, the autofocus circuit system is defective. ● Refer to number "(2) No Zoom Operation" in the "Electrical Adjustment Troubleshooting Guide Section" of this service manual.

ERROR MESSAGES (Spot Noise Adjustment)

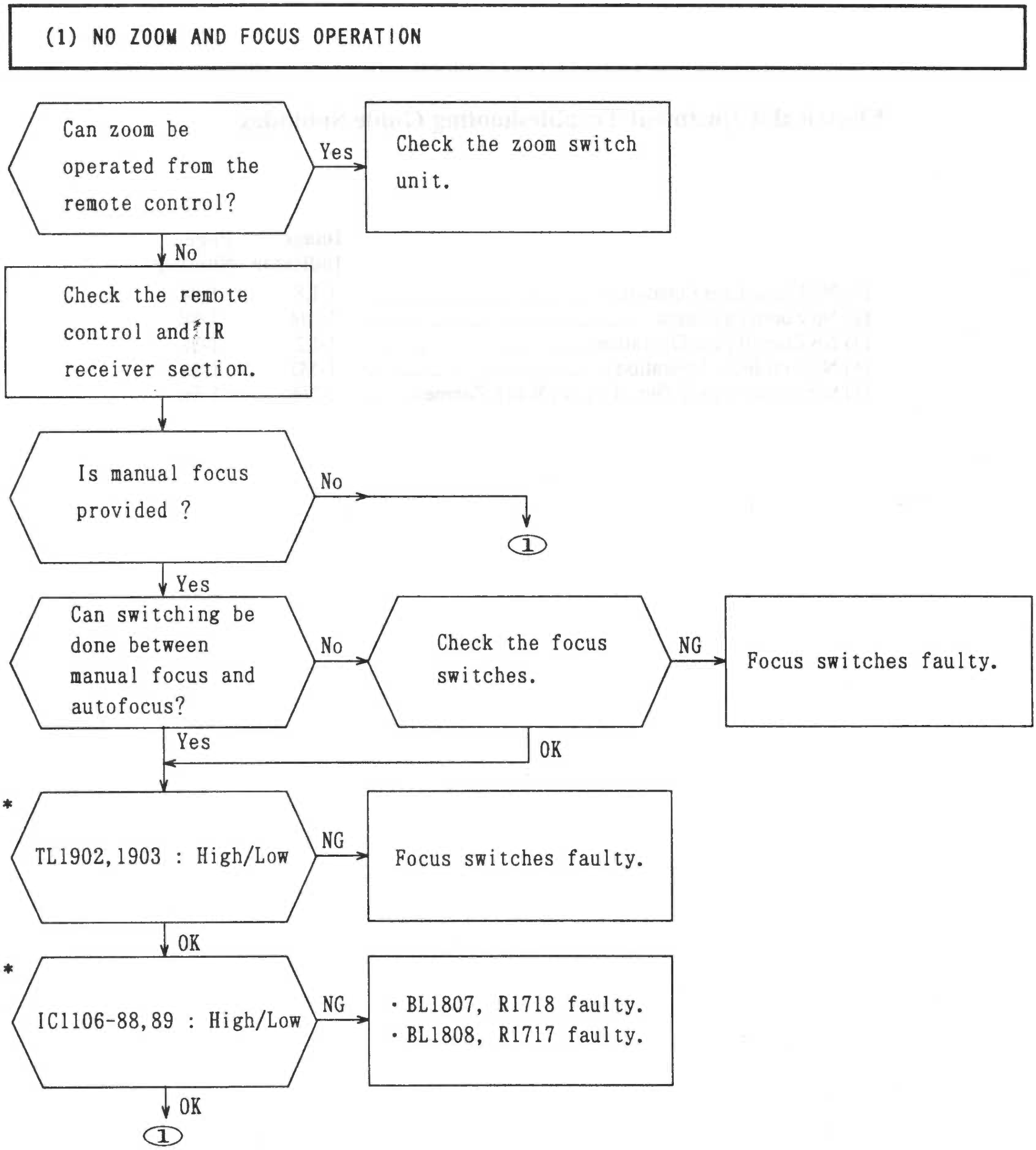
ERROR MESSAGE	COUNTER MEASURE
ERROR!! SPOT NOISE COMPENSATION IS STOPPED BY INITIAL DATA PLEASE CHECK THE EEPROM PRESS ANY KEY	● Spot noise compensation is inhibited by the data in the EEPROM ● Turn the power off and then back on again. ● The data in the EEPROM is defective. Initialize the EEPROM. ● Check the EEPROM and replace if necessary.
ERROR!! THRESHOLD DATA ERROR PLEASE CHECK THE EEPROM PRESS ANY KEY	● Turn the power off and then back on again. ● The data in the EEPROM is defective. Initialize the EEPROM. ● Check the EEPROM and replace if necessary.
ERROR!! THE SPOT NOISE IS TOO MANY CANNOT COMPENSATE ANY MORE PLEASE CHECK THE EEPROM PRESS ANY KEY	● The amount of spot noise that can be compensated for reaches the limit. ● Turn the power off and then back on again. ● Check the CCD image sensor and replace if necessary.

Electrical Adjustment Troubleshooting Guide Subindex

	Image Indicator	Page Number
(1) No Focus Lens Operation	1-L8	1-84
(2) No Zoom Operation	1-M4	1-88
(3) No Zoom/Focus Operation.......................................	1-L2	1-78
(4) No Autofocus Operation	1-M7	1-91
(5) Subject is Greatly Out-of-Focus When Zoomed	1-N4	1-96

ELECTRICAL ADJUSTMENT TROUBLESHOOTING GUIDES

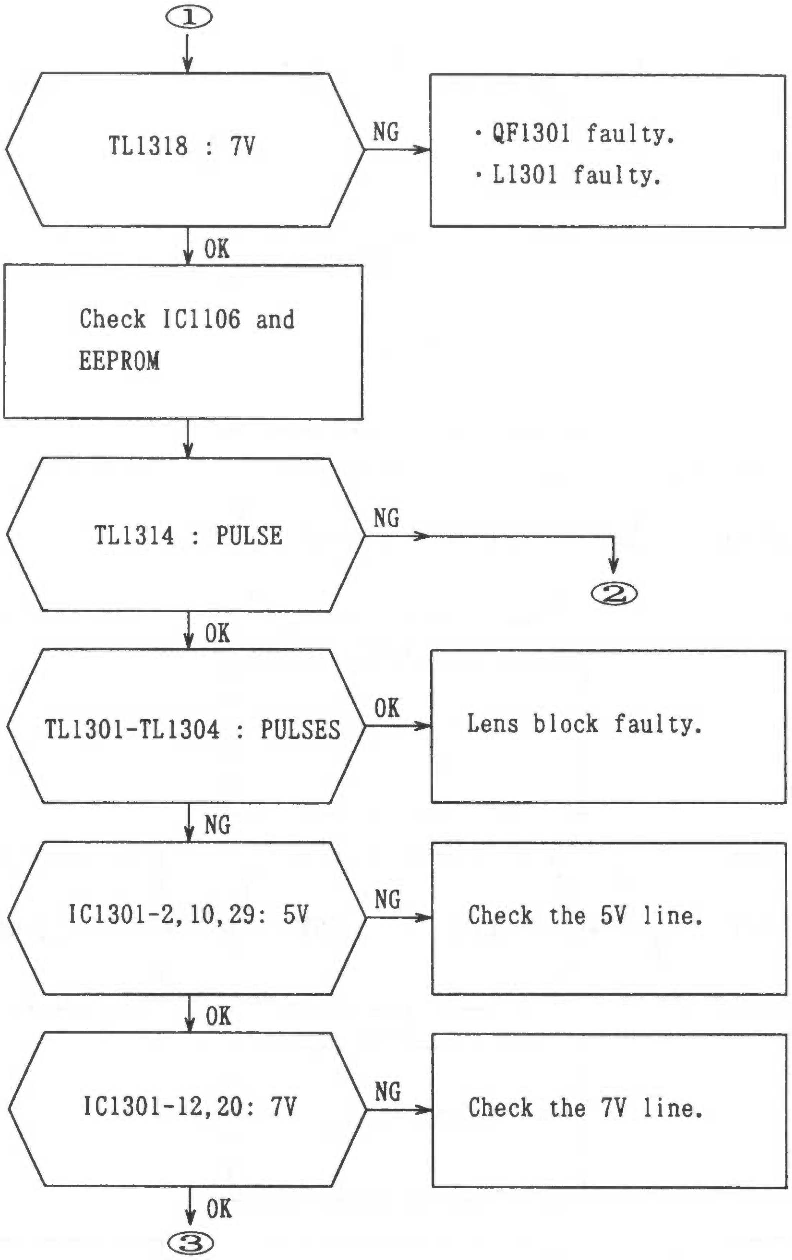
No Zoom and Focus Operation


(1) NO ZOOM AND FOCUS OPERATION
Can zoom be operated from the remote control?
Yes
Check the zoom switch unit.
No
Check the remote control and IR receiver section.
Is manual focus provided ?
No
①
Yes
Can switching be done between manual focus and autofocus?
No
Check the focus switches.
NG
Focus switches faulty.
OK
Yes
*
TL1902,1903 : High/Low
NG
Focus switches faulty.
OK
*
IC1106-88,89 : High/Low
NG
· BL1807, R1718 faulty.
· BL1808, R1717 faulty.
OK
①

Note: Check the items marked * by pressing the manual focus FAR and NEAR switches alternately.

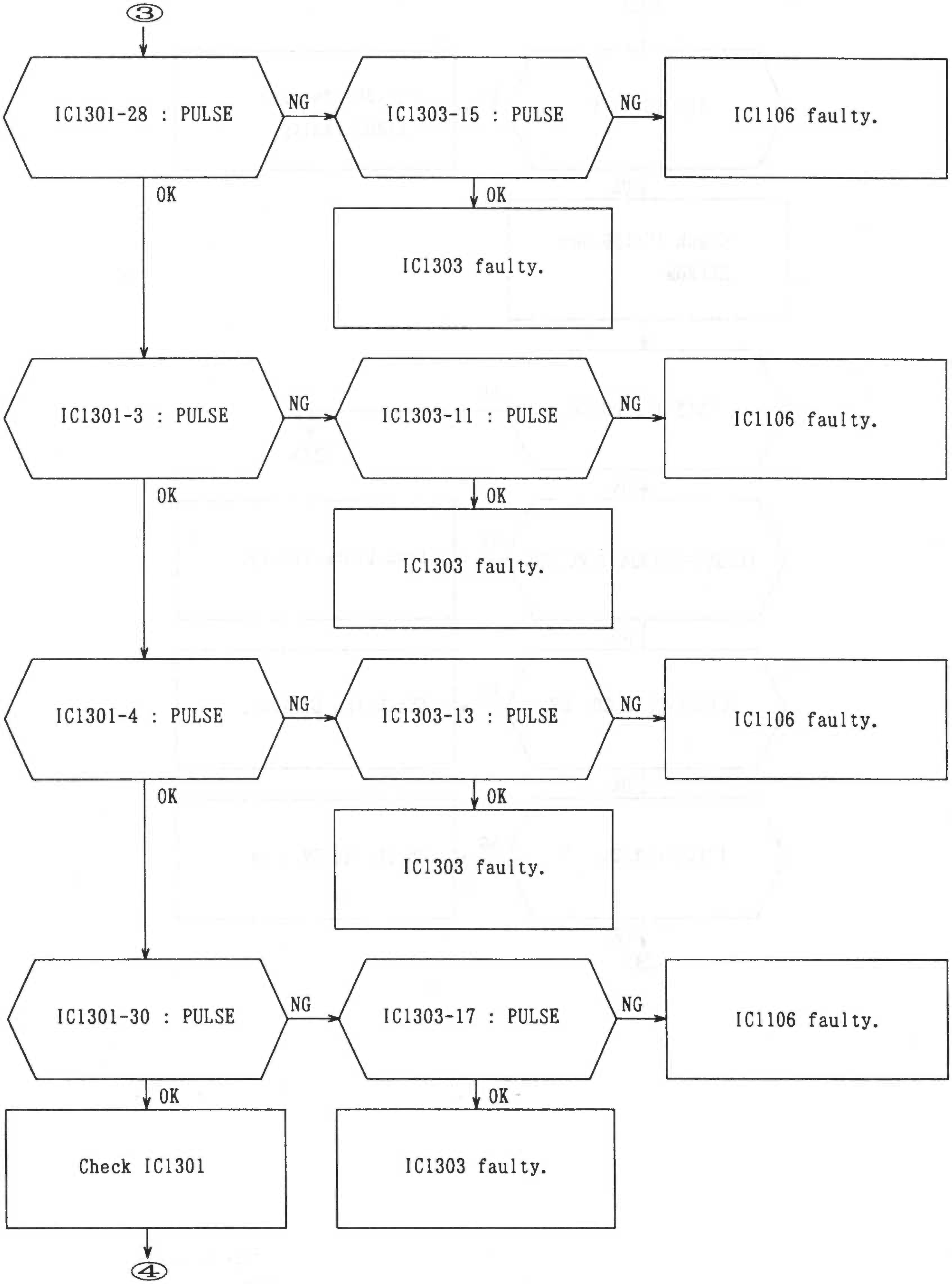
ELECTRICAL ADJUSTMENT TROUBLESHOOTING GUIDES (Continued)

No Zoom and Focus Operation (Continued)


①
TL1318 : 7V
NG
・QF1301 faulty.
・L1301 faulty.
OK
Check IC1106 and EEPROM
TL1314 : PULSE
NG
②
OK
TL1301-TL1304 : PULSES
OK
Lens block faulty.
NG
IC1301-2,10,29: 5V
NG
Check the 5V line.
OK
IC1301-12,20: 7V
NG
Check the 7V line.
OK
③

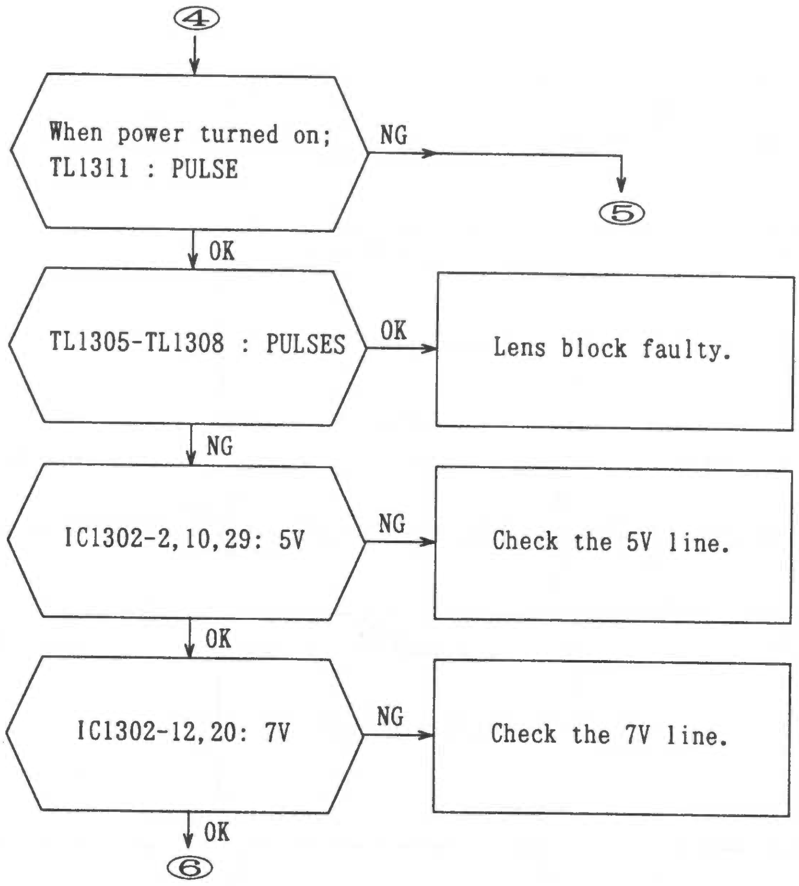
ELECTRICAL ADJUSTMENT TROUBLESHOOTING GUIDES (Continued)

No Zoom and Focus Operation (Continued)


③
IC1301-28 : PULSE
NG
IC1303-15 : PULSE
NG
IC1106 faulty.
OK
OK
IC1303 faulty.
IC1301-3 : PULSE
NG
IC1303-11 : PULSE
NG
IC1106 faulty.
OK
OK
IC1303 faulty.
IC1301-4 : PULSE
NG
IC1303-13 : PULSE
NG
IC1106 faulty.
OK
OK
IC1303 faulty.
IC1301-30 : PULSE
NG
IC1303-17 : PULSE
NG
IC1106 faulty.
OK
OK
Check IC1301
IC1303 faulty.
④

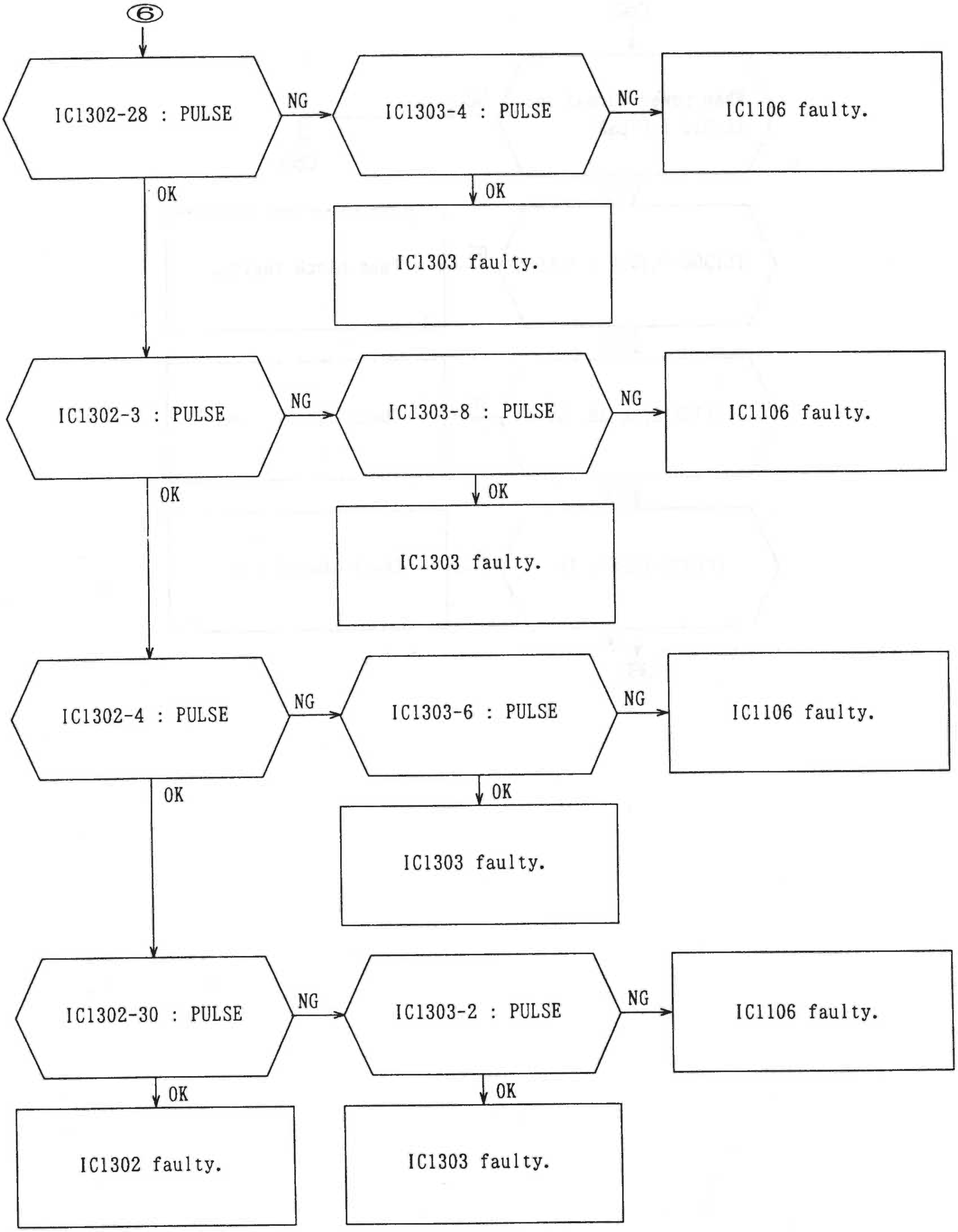
ELECTRICAL ADJUSTMENT TROUBLESHOOTING GUIDES (Continued)

No Zoom and Focus Operation (Continued)


④
When power turned on;
TL1311 : PULSE
NG
⑤
OK
TL1305-TL1308 : PULSES
OK
Lens block faulty.
NG
IC1302-2,10,29: 5V
NG
Check the 5V line.
OK
IC1302-12,20: 7V
NG
Check the 7V line.
OK
⑥

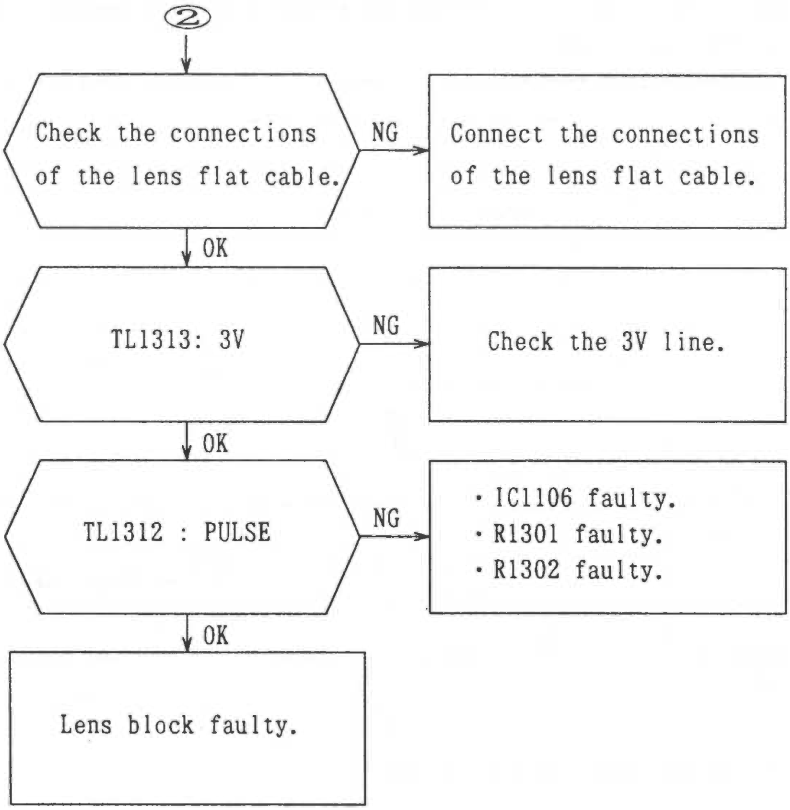
ELECTRICAL ADJUSTMENT TROUBLESHOOTING GUIDES (Continued)

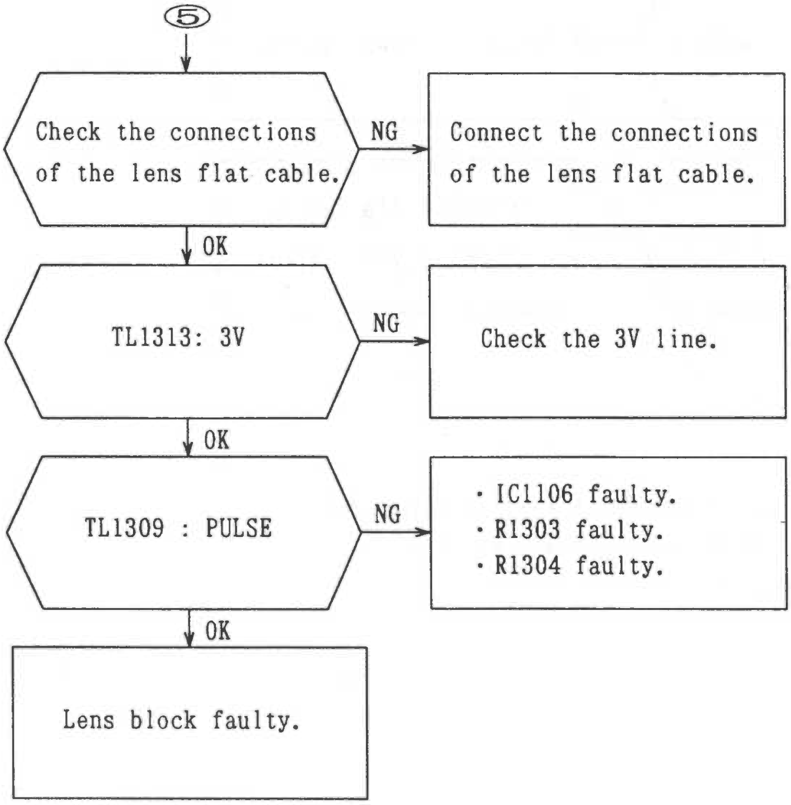
No Zoom and Focus Operation (Continued)


⑥
IC1302-28 : PULSE
NG
IC1303-4 : PULSE
NG
IC1106 faulty.
OK
OK
IC1303 faulty.
IC1302-3 : PULSE
NG
IC1303-8 : PULSE
NG
IC1106 faulty.
OK
OK
IC1303 faulty.
IC1302-4 : PULSE
NG
IC1303-6 : PULSE
NG
IC1106 faulty.
OK
OK
IC1303 faulty.
IC1302-30 : PULSE
NG
IC1303-2 : PULSE
NG
IC1106 faulty.
OK
IC1302 faulty.
OK
IC1303 faulty.

ELECTRICAL ADJUSTMENT TROUBLESHOOTING GUIDES (Continued)

No Zoom and Focus Operation (Continued)

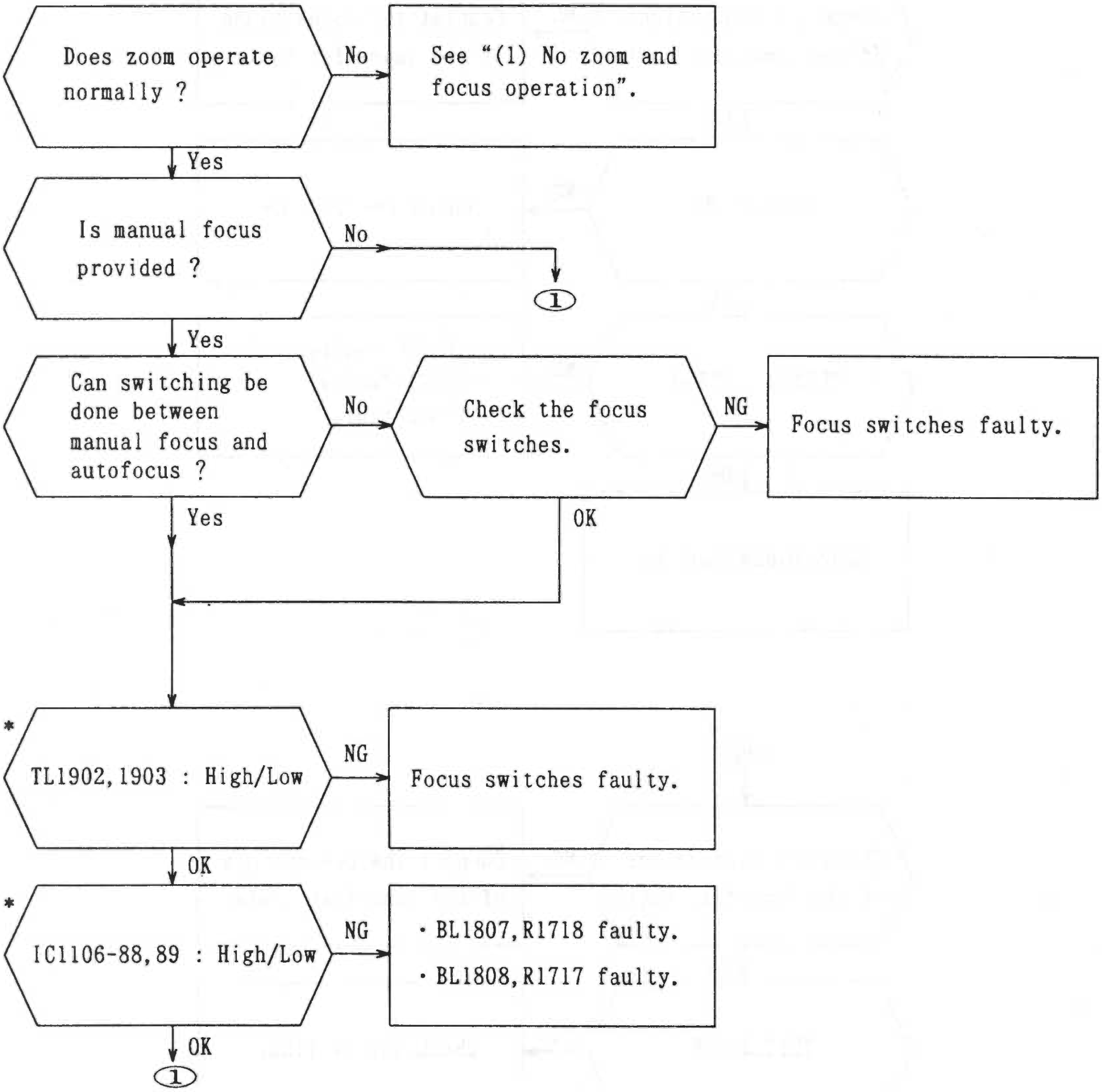

②
Check the connections of the lens flat cable.
NG
Connect the connections of the lens flat cable.
OK
TL1313: 3V
NG
Check the 3V line.
OK
TL1312 : PULSE
NG
· IC1106 faulty.
· R1301 faulty.
· R1302 faulty.
OK
Lens block faulty.


⑤
Check the connections of the lens flat cable.
NG
Connect the connections of the lens flat cable.
OK
TL1313: 3V
NG
Check the 3V line.
OK
TL1309 : PULSE
NG
· IC1106 faulty.
· R1303 faulty.
· R1304 faulty.
OK
Lens block faulty.

ELECTRICAL ADJUSTMENT TROUBLESHOOTING GUIDES (Continued)

No Focus Lens Operation

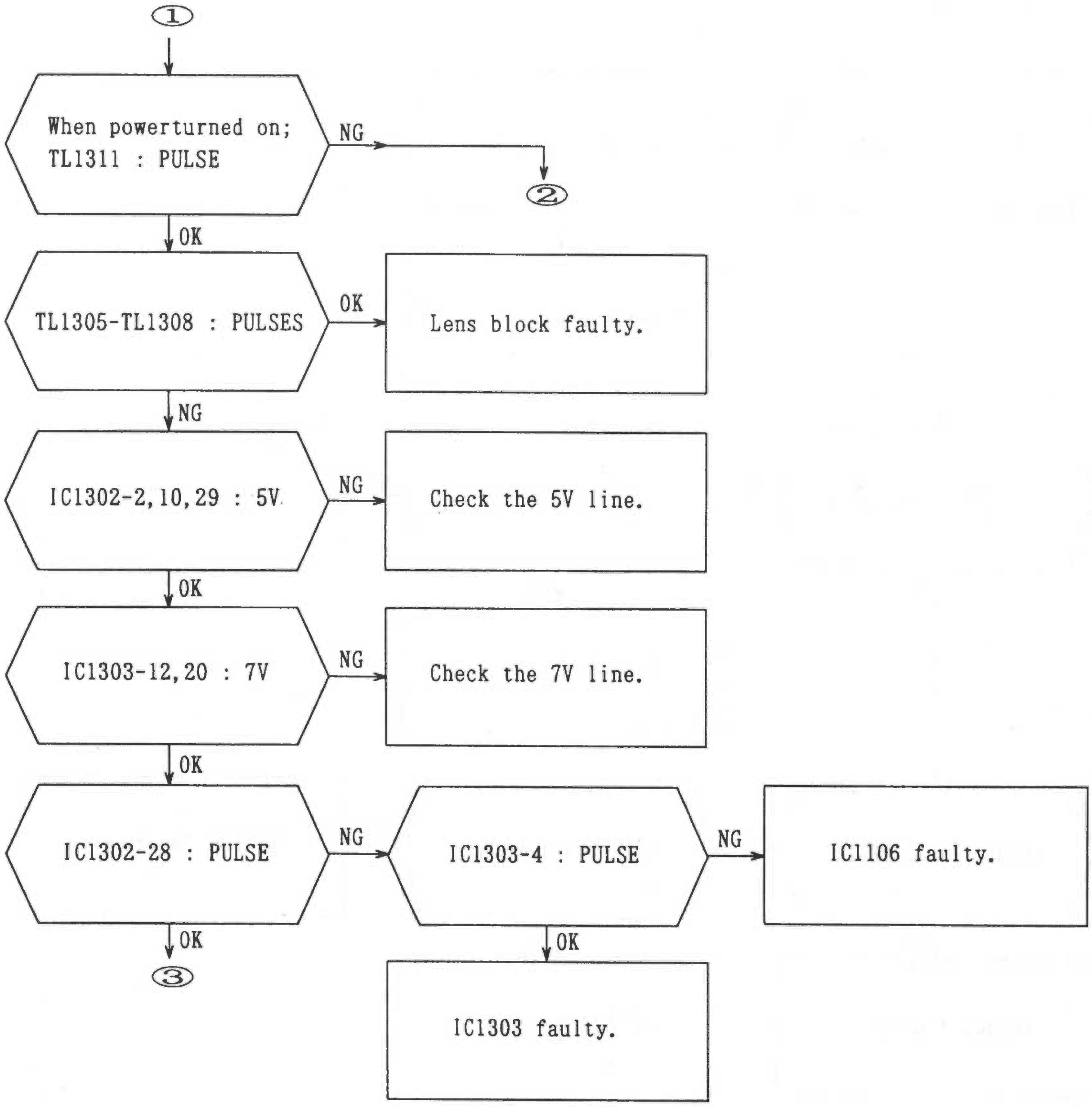
(2) NO FOCUS LENS OPERATION


Does zoom operate normally ?
No
See "(1) No zoom and focus operation".
Yes
Is manual focus provided ?
No
①
Yes
Can switching be done between manual focus and autofocus ?
No
Check the focus switches.
NG
Focus switches faulty.
OK
Yes
*
TL1902, 1903 : High/Low
NG
Focus switches faulty.
OK
*
IC1106-88, 89 : High/Low
NG
· BL1807, R1718 faulty.
· BL1808, R1717 faulty.
OK
①

Note: Check the items marked * by pressing the manual focus FAR and NEAR switches alternately.

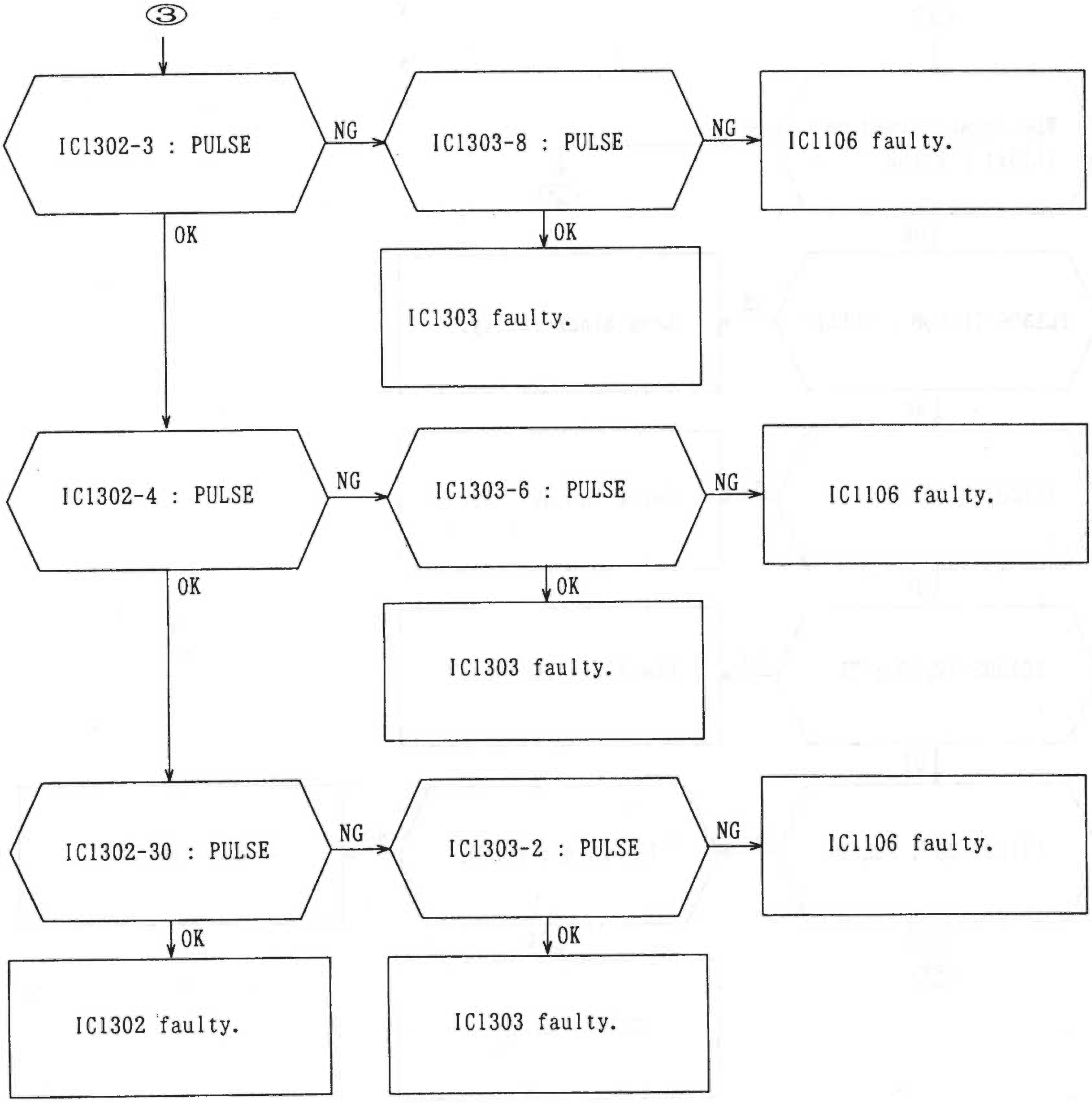
ELECTRICAL ADJUSTMENT TROUBLESHOOTING GUIDES (Continued)

No Focus Lens Operation (Continued)


①
When powerturned on;
TL1311 : PULSE
NG
②
OK
TL1305-TL1308 : PULSES
OK
Lens block faulty.
NG
IC1302-2,10,29 : 5V
NG
Check the 5V line.
OK
IC1303-12,20 : 7V
NG
Check the 7V line.
OK
IC1302-28 : PULSE
NG
IC1303-4 : PULSE
NG
IC1106 faulty.
OK
IC1303 faulty.
OK
③

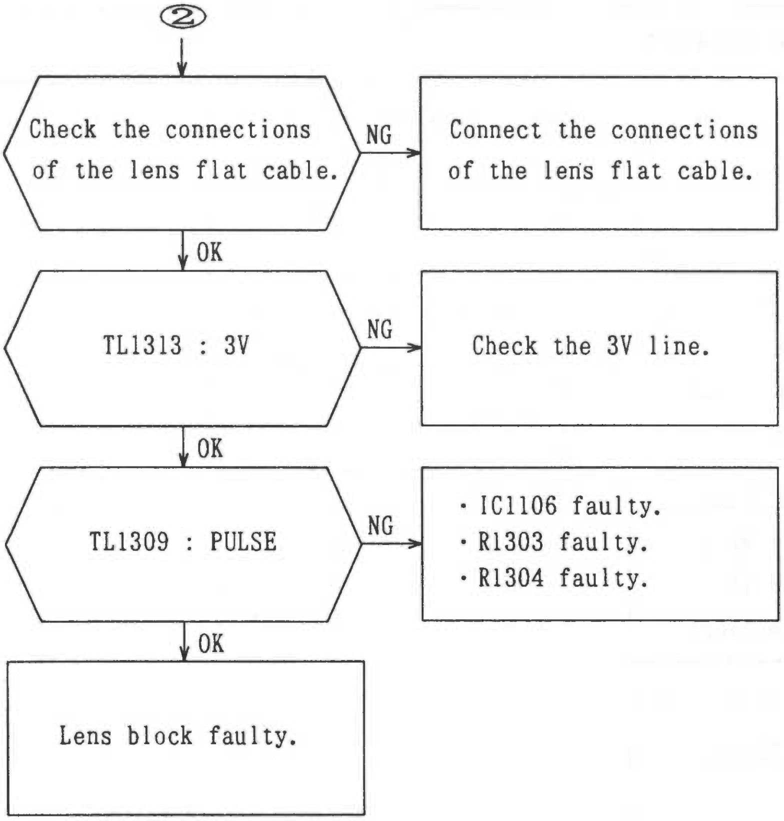
ELECTRICAL ADJUSTMENT TROUBLESHOOTING GUIDES (Continued)

No Focus Lens Operation (Continued)


③
IC1302-3 : PULSE
NG
IC1303-8 : PULSE
NG
IC1106 faulty.
OK
IC1303 faulty.
OK
IC1302-4 : PULSE
NG
IC1303-6 : PULSE
NG
IC1106 faulty.
OK
IC1303 faulty.
OK
IC1302-30 : PULSE
NG
IC1303-2 : PULSE
NG
IC1106 faulty.
OK
IC1302 faulty.
OK
IC1303 faulty.

ELECTRICAL ADJUSTMENT TROUBLESHOOTING GUIDES (Continued)

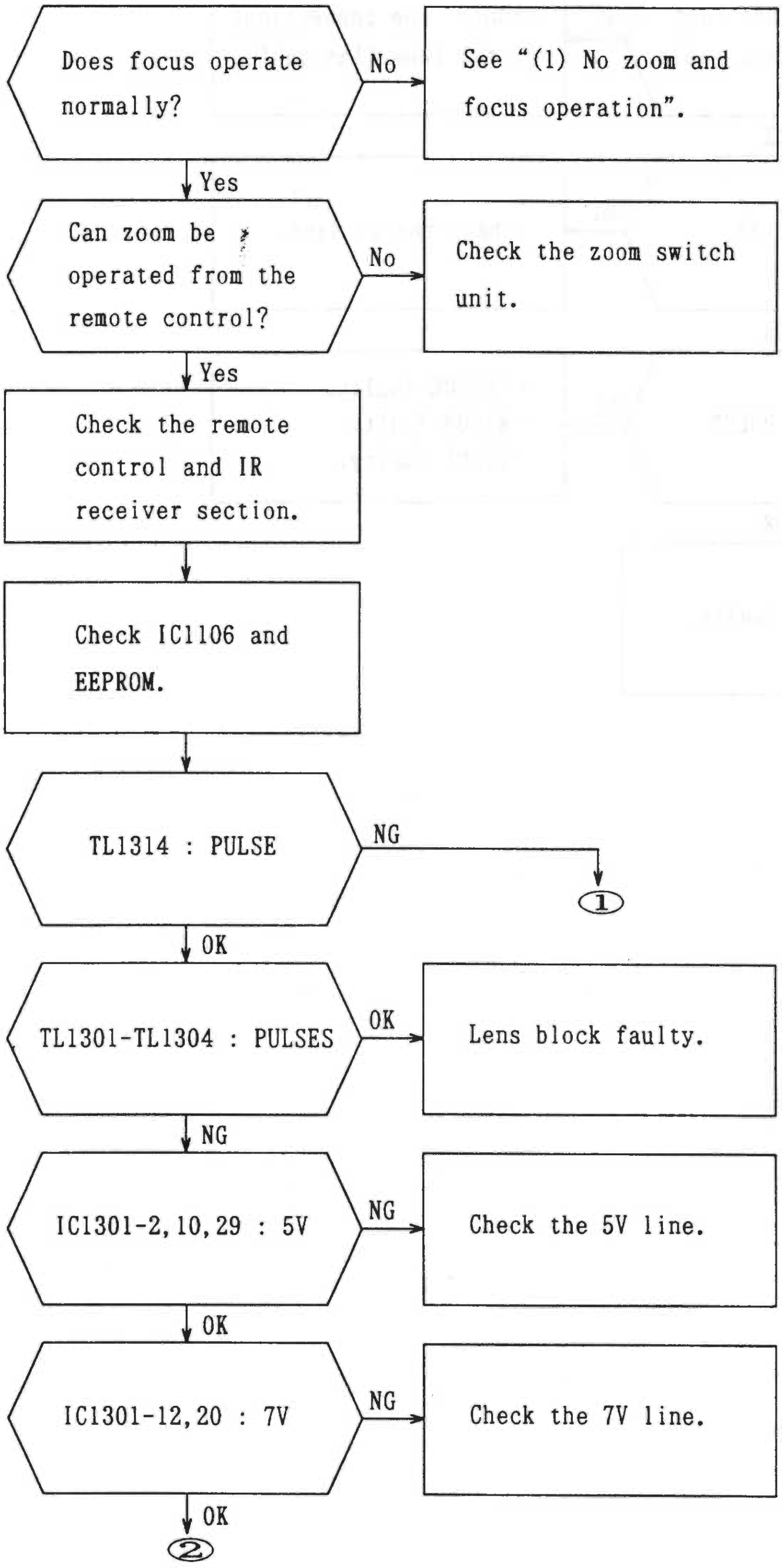
No Focus Lens Operation (Continued)


②
Check the connections of the lens flat cable.
NG
Connect the connections of the lens flat cable.
OK
TL1313 : 3V
NG
Check the 3V line.
OK
TL1309 : PULSE
NG
· IC1106 faulty.
· R1303 faulty.
· R1304 faulty.
OK
Lens block faulty.

ELECTRICAL ADJUSTMENT TROUBLESHOOTING GUIDES (Continued)

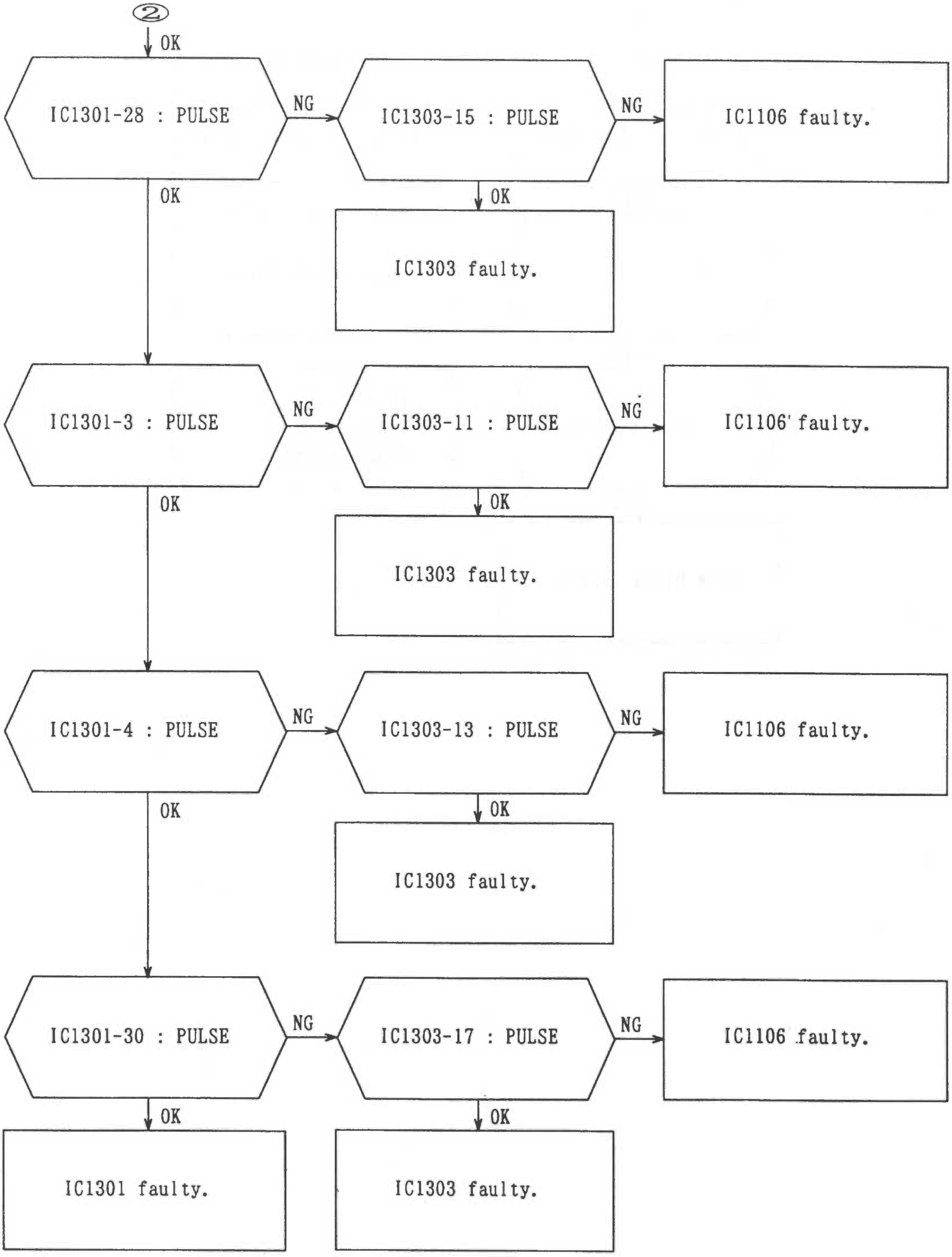
No Zoom Operation

(3) NO ZOOM OPERATION


Does focus operate normally?
No
See "(1) No zoom and focus operation".
Yes
Can zoom be operated from the remote control?
No
Check the zoom switch unit.
Yes
Check the remote control and IR receiver section.
Check IC1106 and EEPROM.
TL1314 : PULSE
NG
①
OK
TL1301-TL1304 : PULSES
OK
Lens block faulty.
NG
IC1301-2, 10, 29 : 5V
NG
Check the 5V line.
OK
IC1301-12, 20 : 7V
NG
Check the 7V line.
OK
②

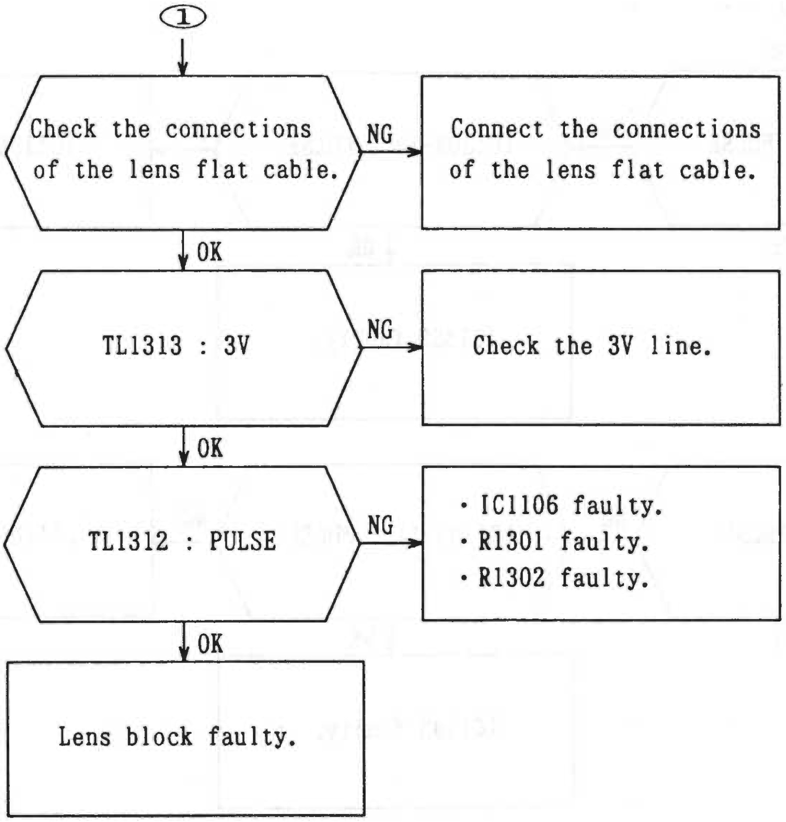
ELECTRICAL ADJUSTMENT TROUBLESHOOTING GUIDES (Continued)

No Zoom Operation (Continued)


②
OK
IC1301-28 : PULSE
NG
IC1303-15 : PULSE
NG
IC1106 faulty.
OK
IC1303 faulty.
OK
IC1301-3 : PULSE
NG
IC1303-11 : PULSE
NG
IC1106 faulty.
OK
IC1303 faulty.
OK
IC1301-4 : PULSE
NG
IC1303-13 : PULSE
NG
IC1106 faulty.
OK
IC1303 faulty.
OK
IC1301-30 : PULSE
NG
IC1303-17 : PULSE
NG
IC1106 faulty.
OK
IC1301 faulty.
OK
IC1303 faulty.

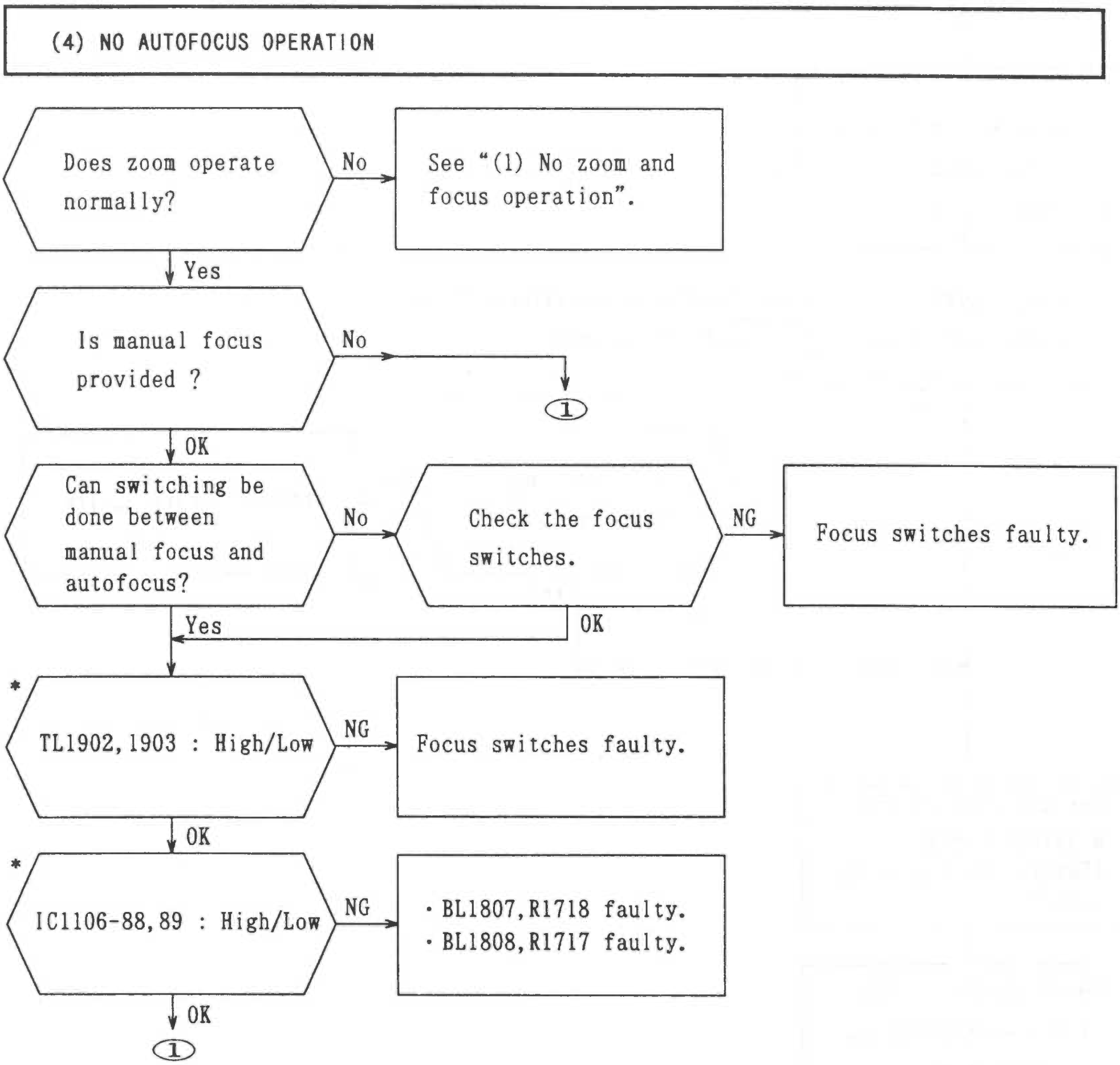
ELECTRICAL ADJUSTMENT TROUBLESHOOTING GUIDES (Continued)

No Zoom Operation (Continued)


①
Check the connections of the lens flat cable.
NG
Connect the connections of the lens flat cable.
OK
TL1313 : 3V
NG
Check the 3V line.
OK
TL1312 : PULSE
NG
· IC1106 faulty.
· R1301 faulty.
· R1302 faulty.
OK
Lens block faulty.

ELECTRICAL ADJUSTMENT TROUBLESHOOTING GUIDES (Continued)

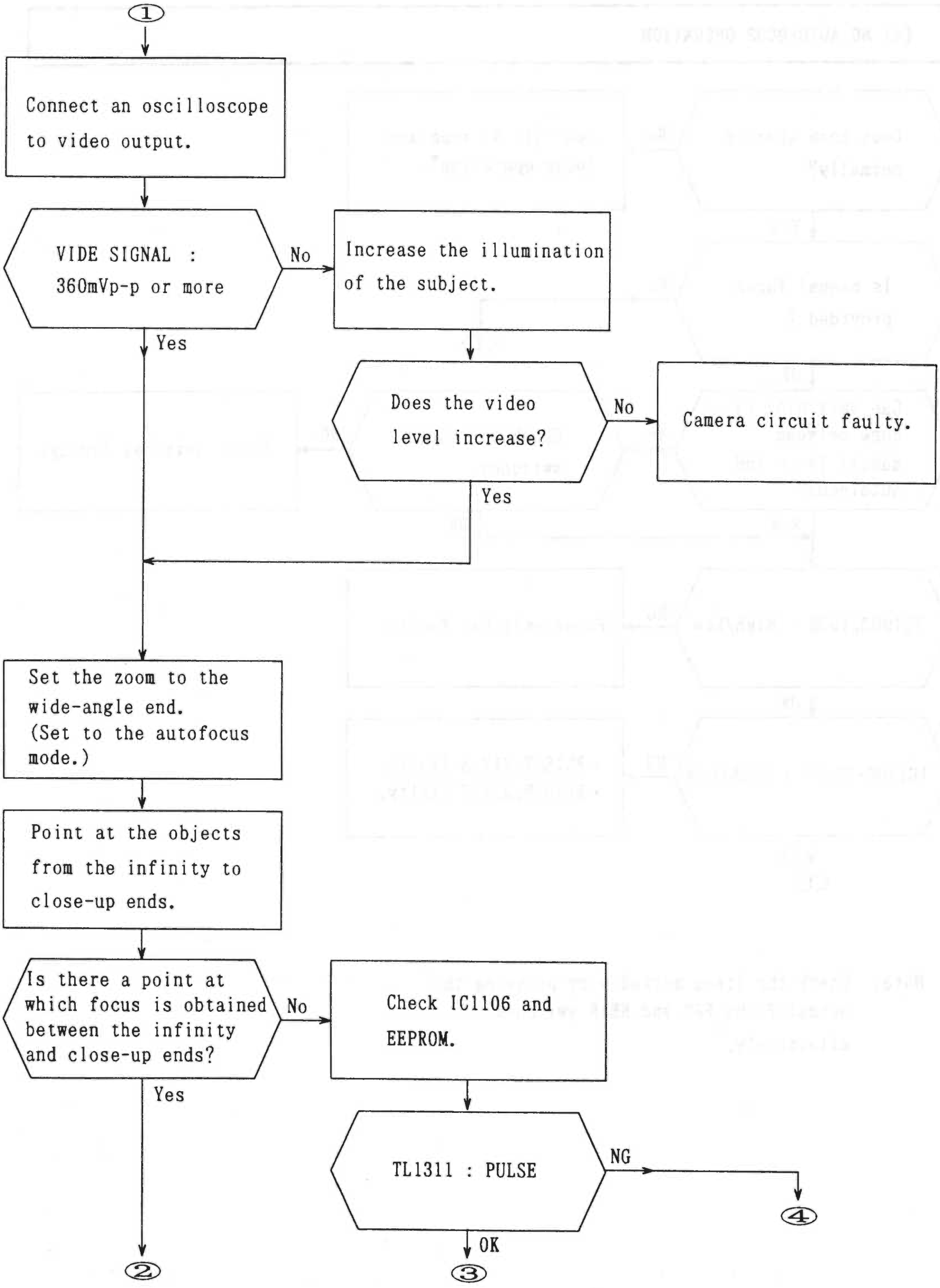
No Auto Focus Operation


(4) NO AUTOFOCUS OPERATION
Does zoom operate normally?
No
See "(1) No zoom and focus operation".
Yes
Is manual focus provided ?
No
①
OK
Can switching be done between manual focus and autofocus?
No
Check the focus switches.
NG
Focus switches faulty.
OK
Yes
*
TL1902, 1903 : High/Low
NG
Focus switches faulty.
OK
*
IC1106-88, 89 : High/Low
NG
· BL1807, R1718 faulty.
· BL1808, R1717 faulty.
OK
①

Note: Check the items marked * by pressing the manual focus FAR and NEAR switches alternately.

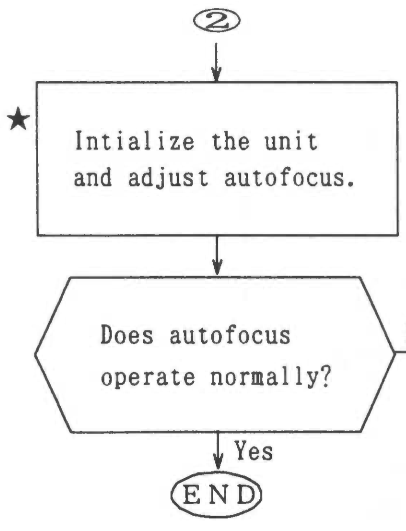
ELECTRICAL ADJUSTMENT TROUBLESHOOTING GUIDES (Continued)

No Auto Focus Operation (Continued)

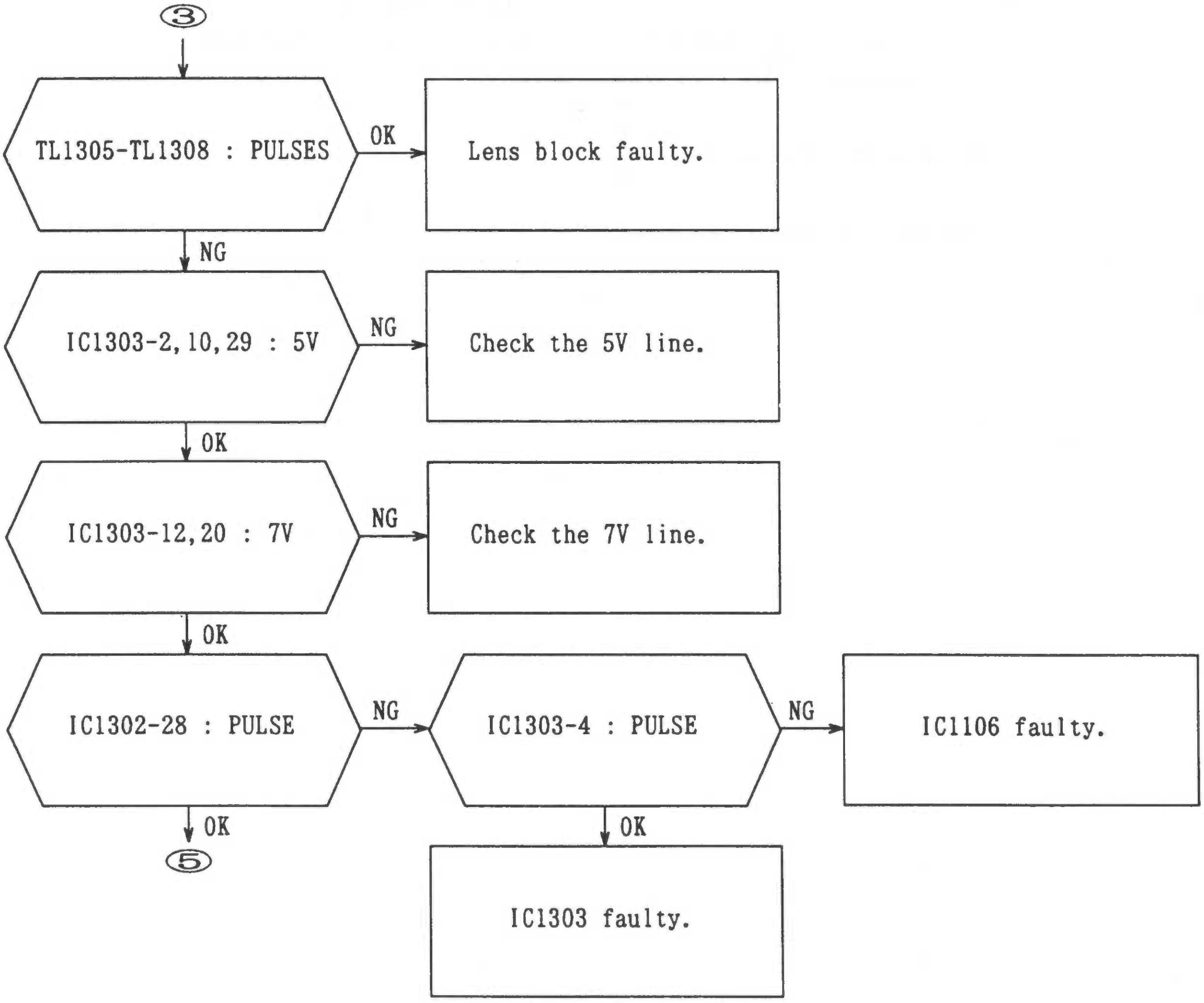

①
Connect an oscilloscope to video output.
VIDE SIGNAL : 360mVp-p or more
No
Increase the illumination of the subject.
Yes
Does the video level increase?
No
Camera circuit faulty.
Yes
Set the zoom to the wide-angle end. (Set to the autofocus mode.)
Point at the objects from the infinity to close-up ends.
Is there a point at which focus is obtained between the infinity and close-up ends?
No
Check IC1106 and EEPROM.
Yes
TL1311 : PULSE
NG
④
OK
②
③

ELECTRICAL ADJUSTMENT TROUBLESHOOTING GUIDES (Continued)

No Auto Focus Operation (Continued)

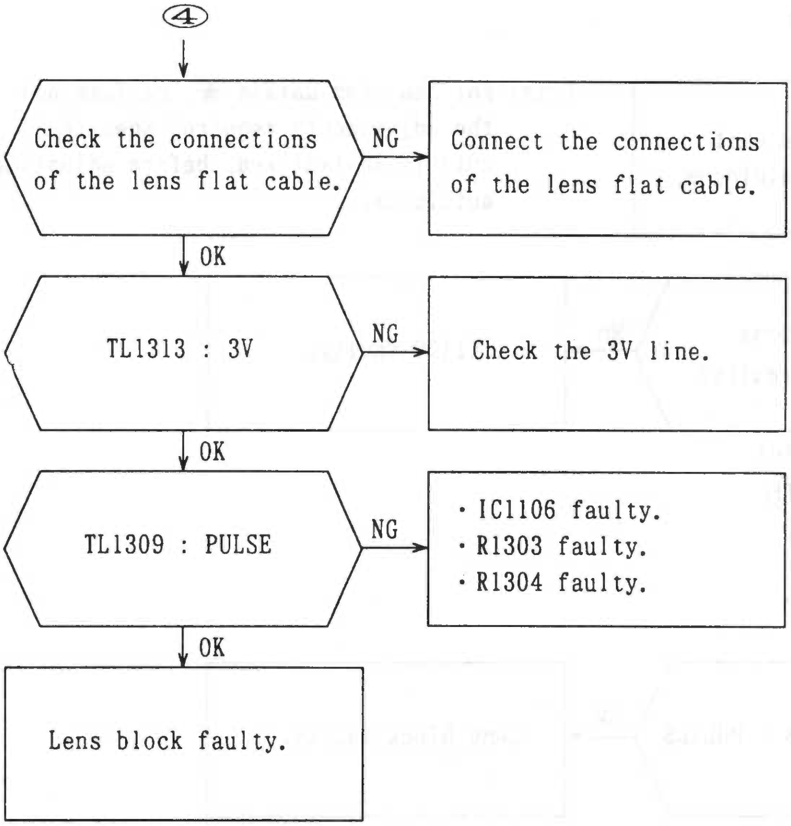

②
★
Intialize the unit and adjust autofocus.
Does autofocus operate normally?
No
IC1106 faulty.
Yes
END

Note: For the item marked ★, perform all the adjustments required when the unit is initialized, before adjusting autofocus.


③
TL1305-TL1308 : PULSES
OK
Lens block faulty.
NG
IC1303-2, 10, 29 : 5V
NG
Check the 5V line.
OK
IC1303-12, 20 : 7V
NG
Check the 7V line.
OK
IC1302-28 : PULSE
NG
IC1303-4 : PULSE
NG
IC1106 faulty.
OK
⑤
OK
IC1303 faulty.

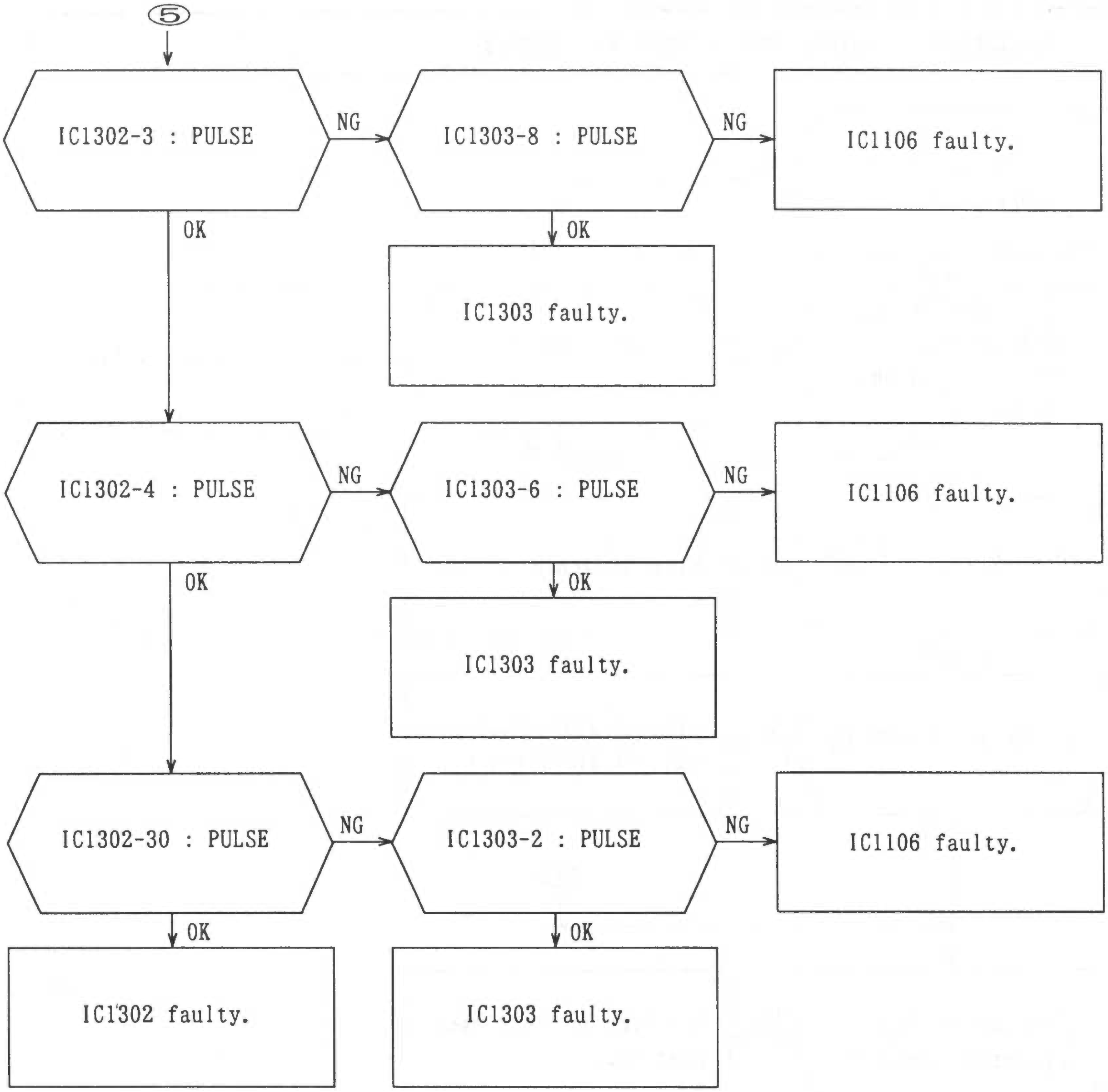
ELECTRICAL ADJUSTMENT TROUBLESHOOTING GUIDES (Continued)

No Auto Focus Operation (Continued)


④
Check the connections of the lens flat cable.
NG
Connect the connections of the lens flat cable.
OK
TL1313 : 3V
NG
Check the 3V line.
OK
TL1309 : PULSE
NG
· IC1106 faulty.
· R1303 faulty.
· R1304 faulty.
OK
Lens block faulty.

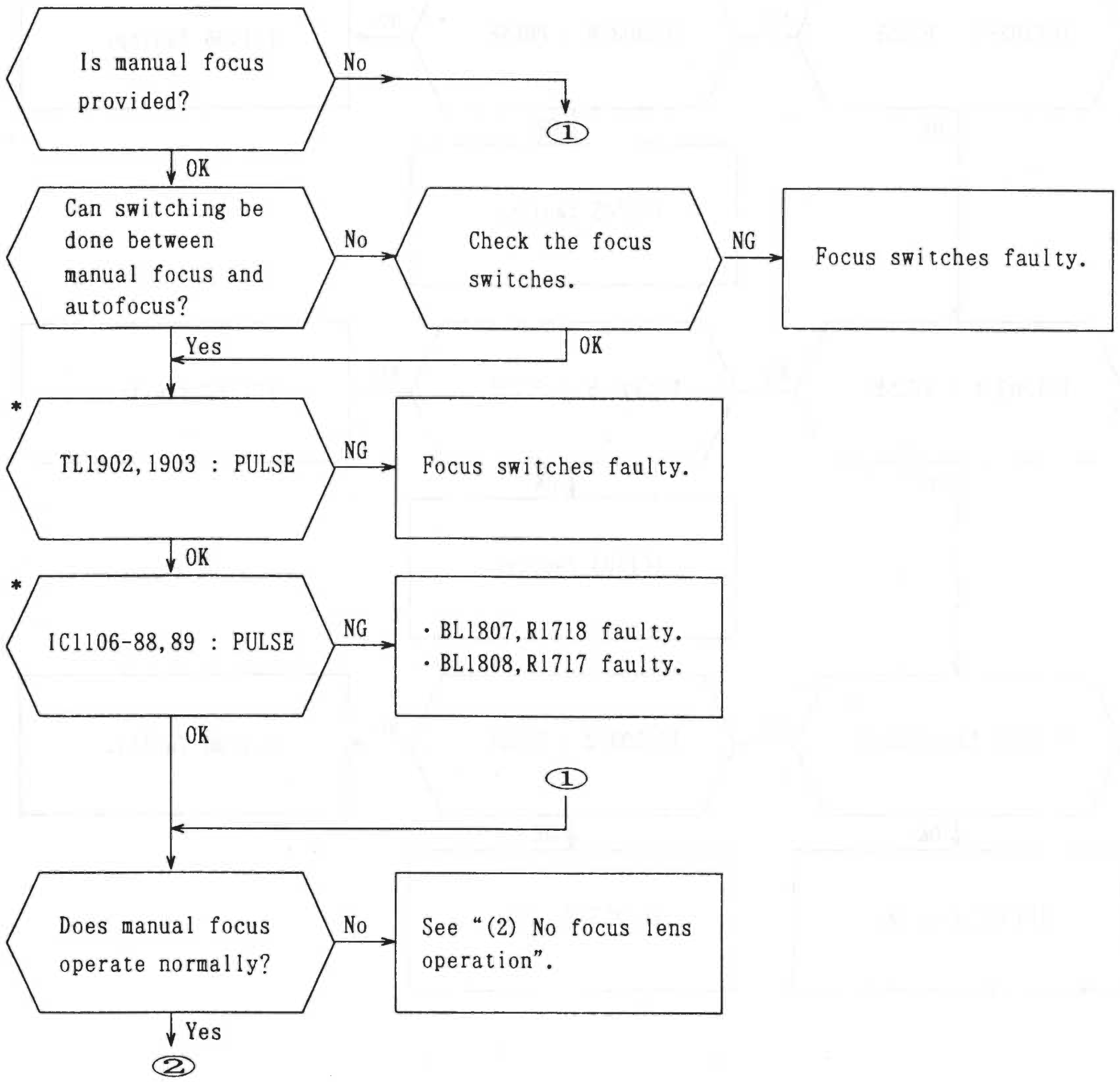
ELECTRICAL ADJUSTMENT TROUBLESHOOTING GUIDES (Continued)

No Auto Focus Operation (Continued)


⑤
IC1302-3 : PULSE
NG
IC1303-8 : PULSE
NG
IC1106 faulty.
OK
IC1303 faulty.
OK
IC1302-4 : PULSE
NG
IC1303-6 : PULSE
NG
IC1106 faulty.
OK
IC1303 faulty.
OK
IC1302-30 : PULSE
NG
IC1303-2 : PULSE
NG
IC1106 faulty.
OK
IC1302 faulty.
OK
IC1303 faulty.

Subject is Greater Out-of-Focus Whem Zoomed

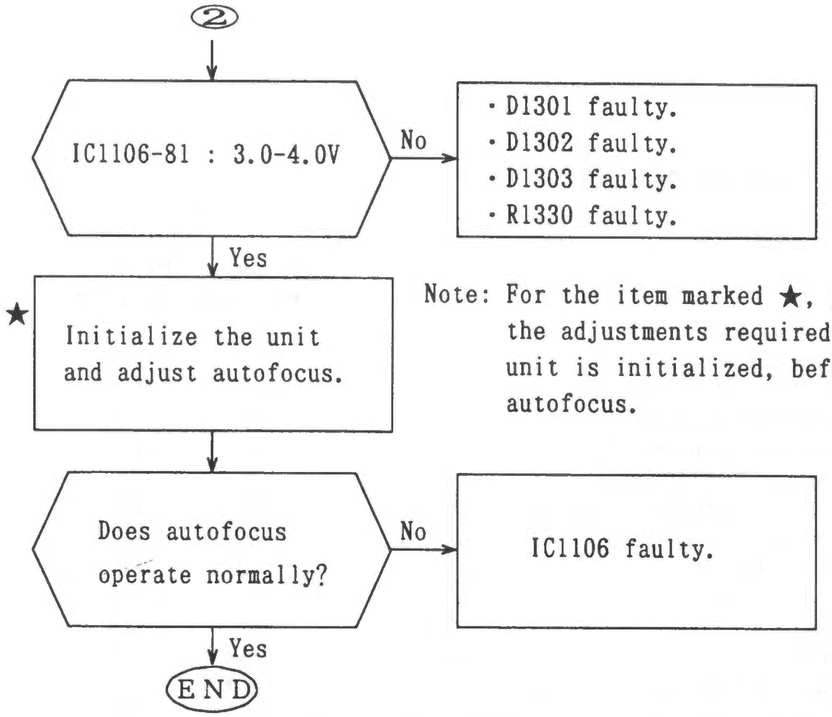
(5) SUBJECT IS GREATLY OUT-OF-FOCUS WHEN ZOOMED.


Is manual focus provided?
No
①
OK
Can switching be done between manual focus and autofocus?
No
Check the focus switches.
NG
Focus switches faulty.
Yes
OK
*
TL1902,1903 : PULSE
NG
Focus switches faulty.
OK
*
IC1106-88,89 : PULSE
NG
· BL1807,R1718 faulty.
· BL1808,R1717 faulty.
OK
①
Does manual focus operate normally?
No
See "(2) No focus lens operation".
Yes
②

Note: Check the items marked * by pressing the manual focus FAR and NEAR switches alternately.

ELECTRICAL ADJUSTMENT TROUBLESHOOTING GUIDES (Continued)

Subject is Greater Out-of-Focus Whem Zoomed (Continued)


②
IC1106-81 : 3.0-4.0V
No
・D1301 faulty.
・D1302 faulty.
・D1303 faulty.
・R1330 faulty.
Yes
★
Initialize the unit and adjust autofocus.
Does autofocus operate normally?
No
IC1106 faulty.
Yes
END

Note: For the item marked ★, perform all the adjustments required when the unit is initialized, before adjusting autofocus.

Troubleshooting Guide Subindex

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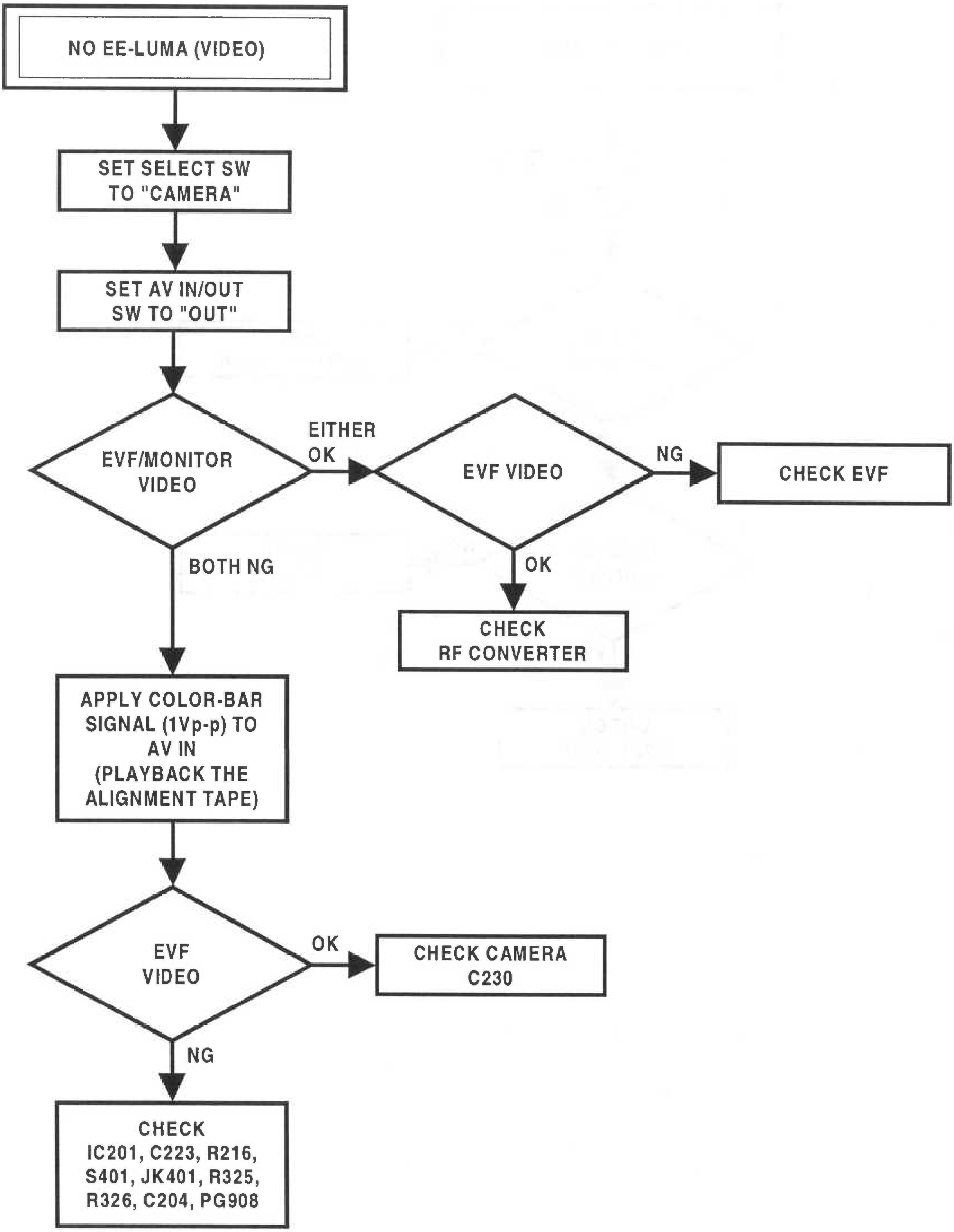
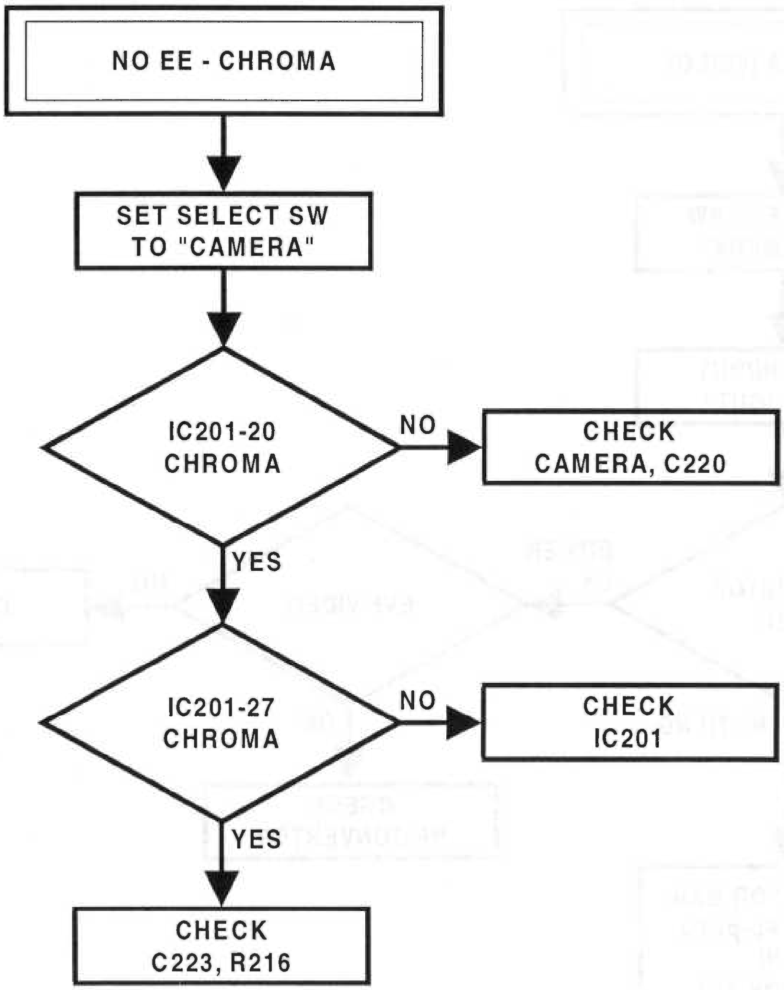
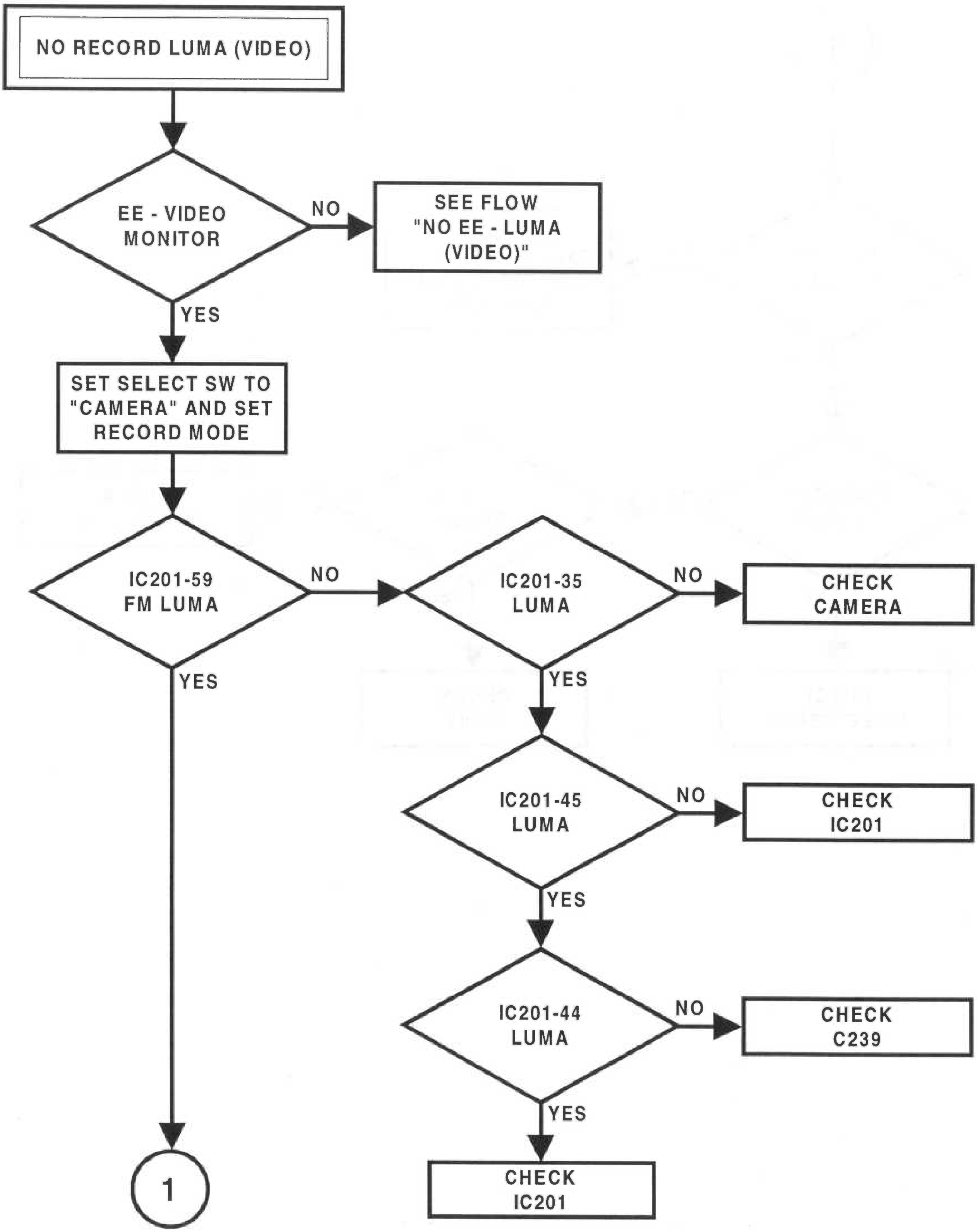

NO EE-LUMA (VIDEO)
SET SELECT SW TO "CAMERA"
SET AV IN/OUT SW TO "OUT"
EVF/MONITOR VIDEO
EITHER OK
EVF VIDEO
NG
CHECK EVF
OK
CHECK RF CONVERTER
BOTH NG
APPLY COLOR-BAR SIGNAL (1Vp-p) TO AV IN (PLAYBACK THE ALIGNMENT TAPE)
EVF VIDEO
OK
CHECK CAMERA C230
NG
CHECK IC201, C223, R216, S401, JK401, R325, R326, C204, PG908

TROUBLESHOOTING GUIDES (Continued)


NO EE - CHROMA
SET SELECT SW TO "CAMERA"
IC201-20 CHROMA
NO
CHECK CAMERA, C220
YES
IC201-27 CHROMA
NO
CHECK IC201
YES
CHECK C223, R216

TROUBLESHOOTING GUIDES (Continued)


NO RECORD LUMA (VIDEO)
EE - VIDEO MONITOR
NO
SEE FLOW "NO EE - LUMA (VIDEO)"
YES
SET SELECT SW TO "CAMERA" AND SET RECORD MODE
IC201-59 FM LUMA
NO
IC201-35 LUMA
NO
CHECK CAMERA
YES
IC201-45 LUMA
NO
CHECK IC201
YES
IC201-44 LUMA
NO
CHECK C239
YES
CHECK IC201
YES
1

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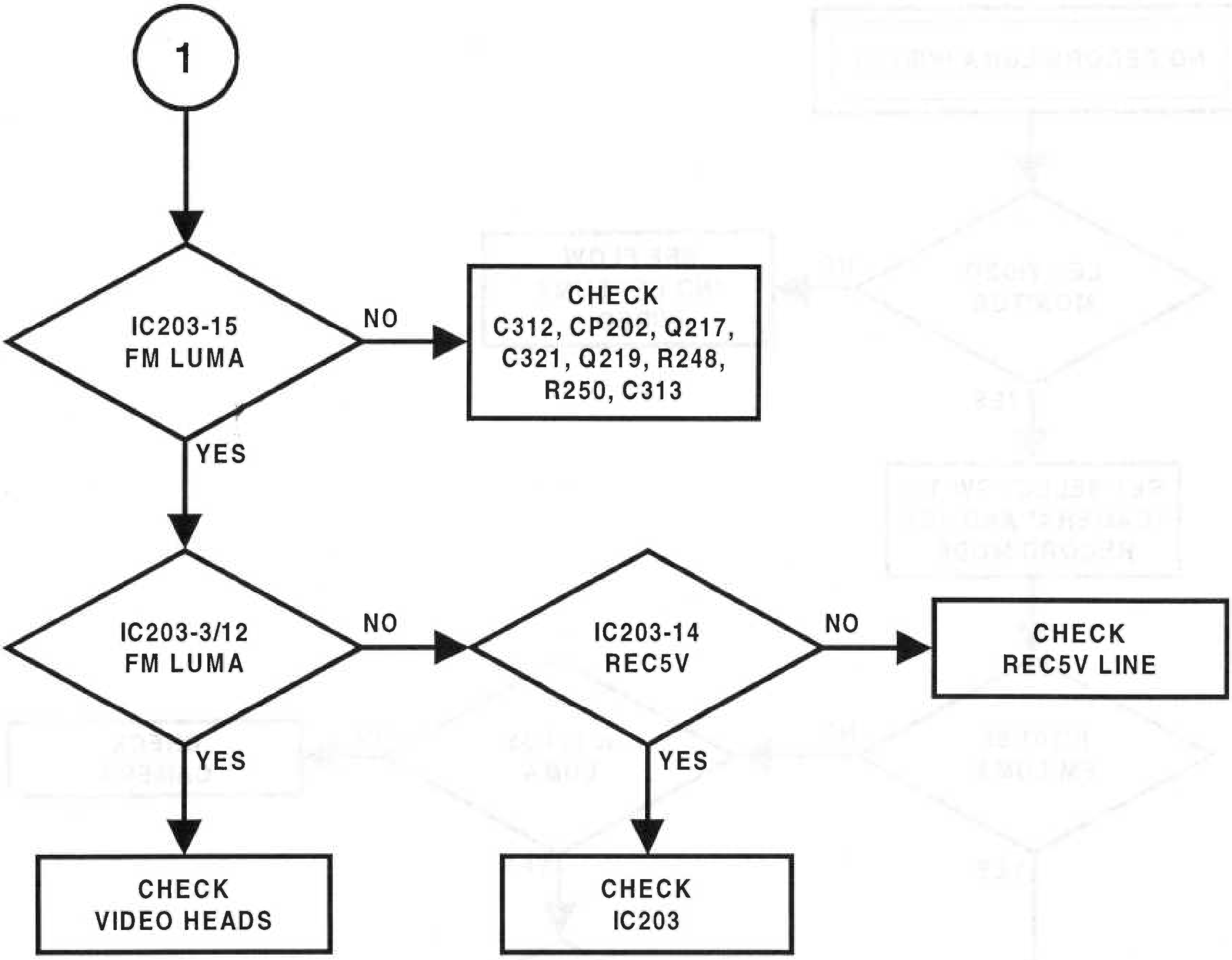
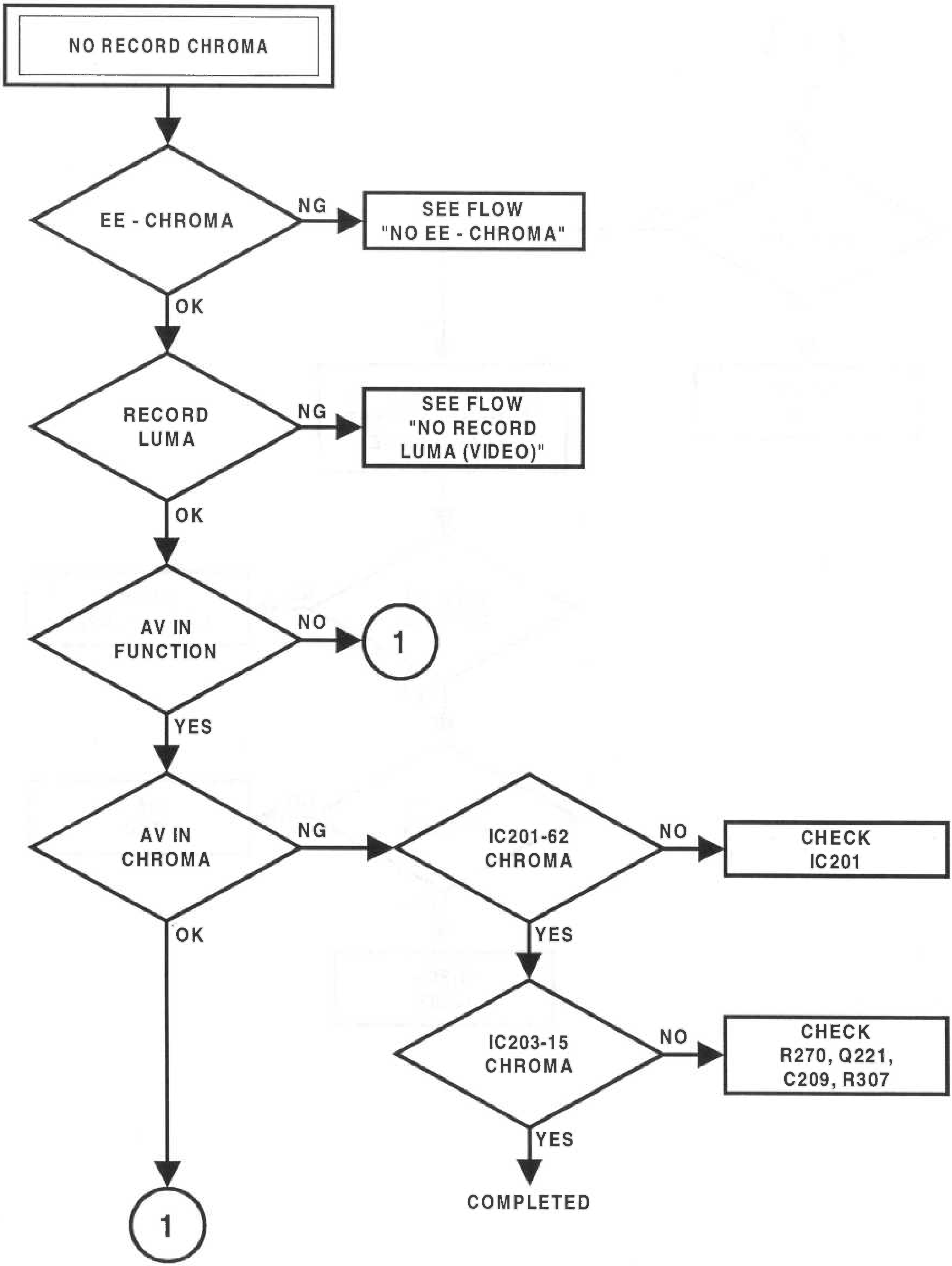
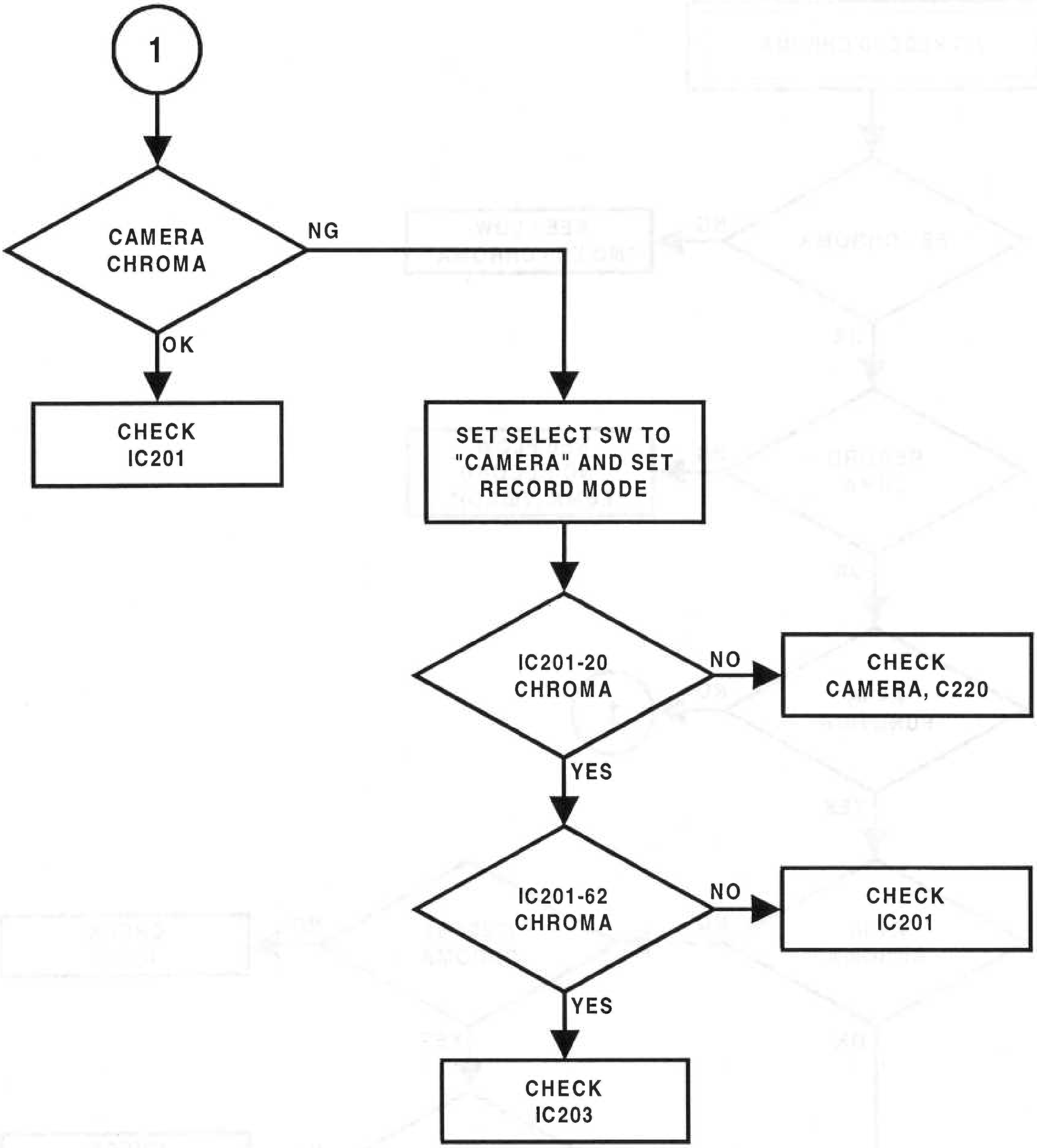
TROUBLESHOOTING GUIDES (Continued)

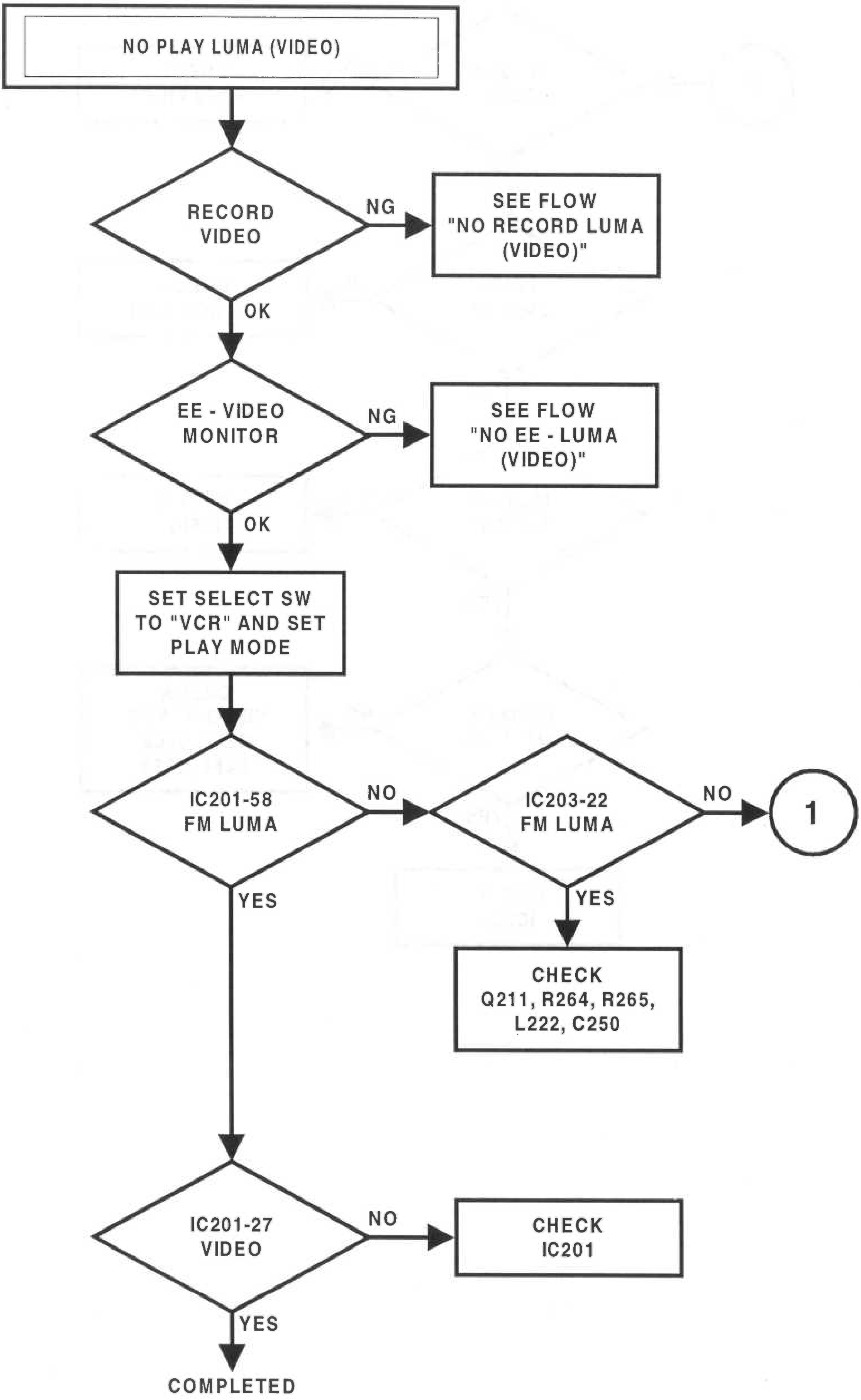

1
IC203-15
FM LUMA
NO
CHECK
C312, CP202, Q217,
C321, Q219, R248,
R250, C313
YES
IC203-3/12
FM LUMA
NO
IC203-14
REC5V
NO
CHECK
REC5V LINE
YES
CHECK
VIDEO HEADS
YES
CHECK
IC203

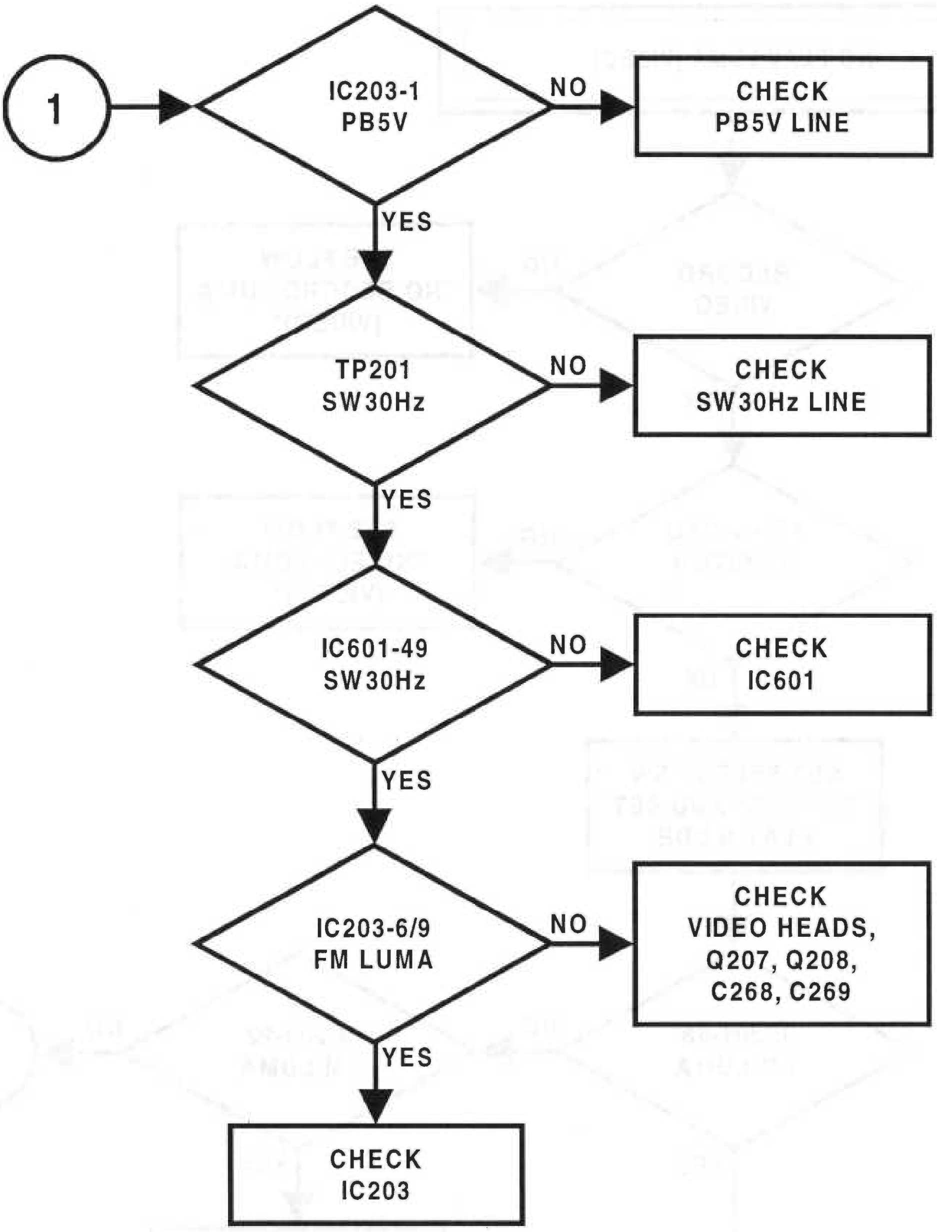

NO RECORD CHROMA
EE - CHROMA
NG
SEE FLOW "NO EE - CHROMA"
OK
RECORD LUMA
NG
SEE FLOW "NO RECORD LUMA (VIDEO)"
OK
AV IN FUNCTION
NO
1
YES
AV IN CHROMA
NG
IC201-62 CHROMA
NO
CHECK IC201
YES
IC203-15 CHROMA
NO
CHECK R270, Q221, C209, R307
YES
COMPLETED
OK
1

TROUBLESHOOTING GUIDES (Continued)

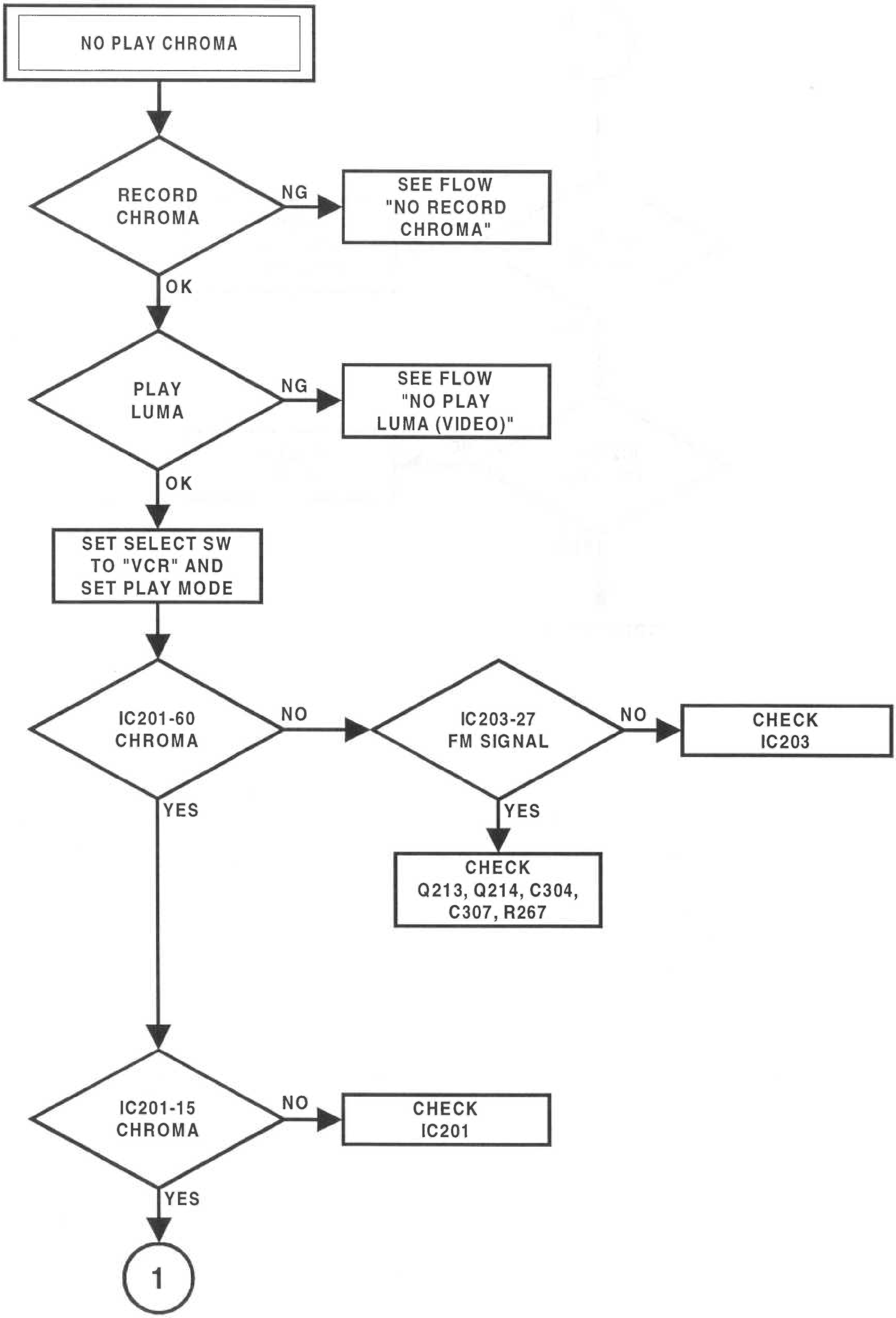

1
CAMERA CHROMA
NG
OK
CHECK IC201
SET SELECT SW TO "CAMERA" AND SET RECORD MODE
IC201-20 CHROMA
NO
CHECK CAMERA, C220
YES
IC201-62 CHROMA
NO
CHECK IC201
YES
CHECK IC203

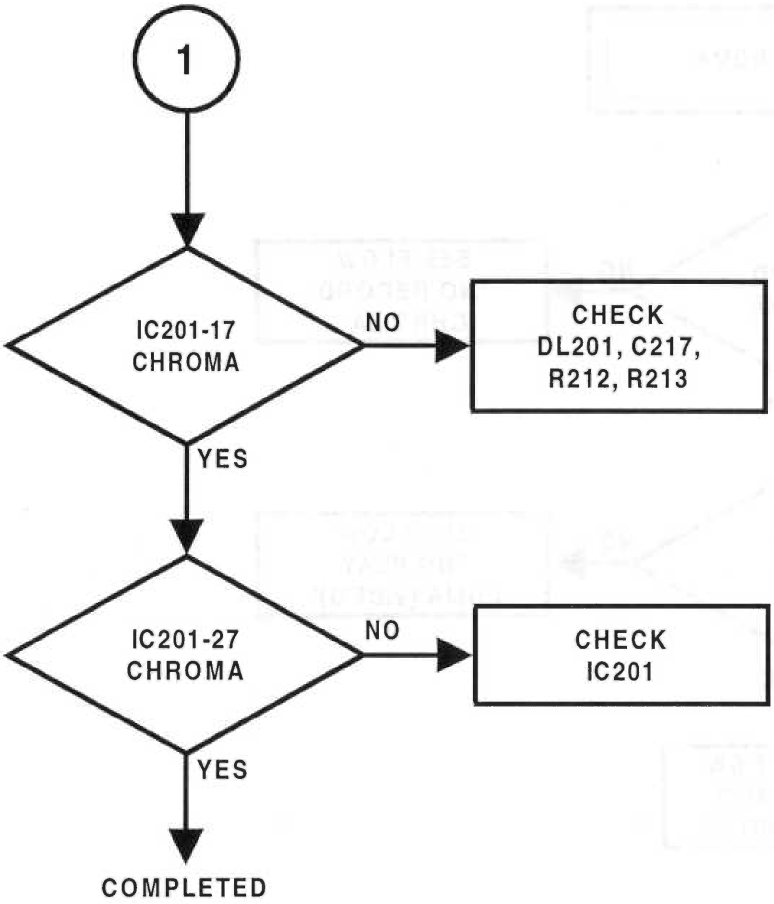
TROUBLESHOOTING GUIDES (Continued)

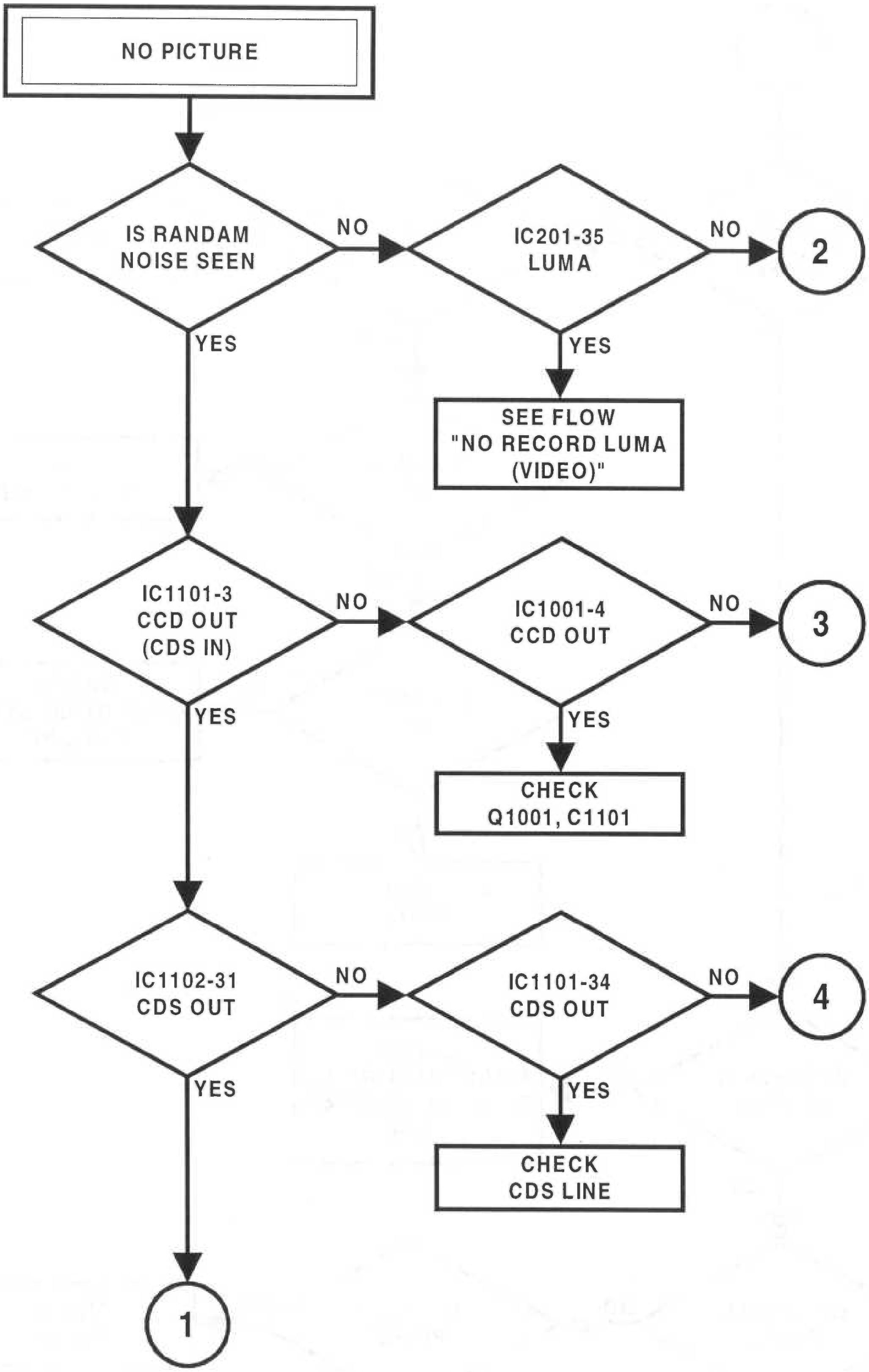

NO PLAY LUMA (VIDEO)
RECORD VIDEO
NG
SEE FLOW "NO RECORD LUMA (VIDEO)"
OK
EE - VIDEO MONITOR
NG
SEE FLOW "NO EE - LUMA (VIDEO)"
OK
SET SELECT SW TO "VCR" AND SET PLAY MODE
IC201-58 FM LUMA
NO
IC203-22 FM LUMA
NO
1
YES
YES
CHECK Q211, R264, R265, L222, C250
IC201-27 VIDEO
NO
CHECK IC201
YES
COMPLETED


1
IC203-1
PB5V
NO
CHECK
PB5V LINE
YES
TP201
SW30Hz
NO
CHECK
SW30Hz LINE
YES
IC601-49
SW30Hz
NO
CHECK
IC601
YES
IC203-6/9
FM LUMA
NO
CHECK
VIDEO HEADS,
Q207, Q208,
C268, C269
YES
CHECK
IC203

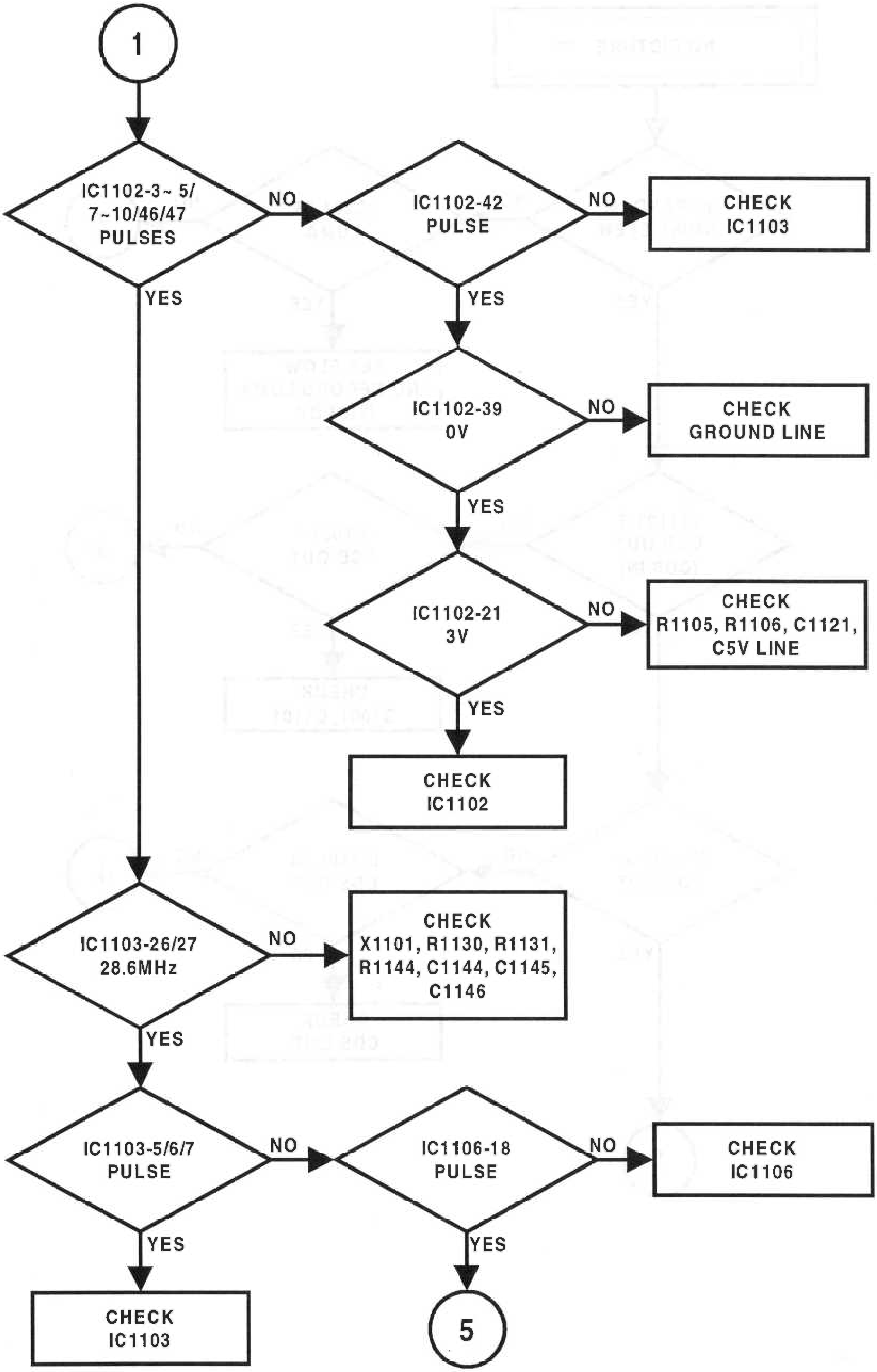
TROUBLESHOOTING GUIDES (Continued)

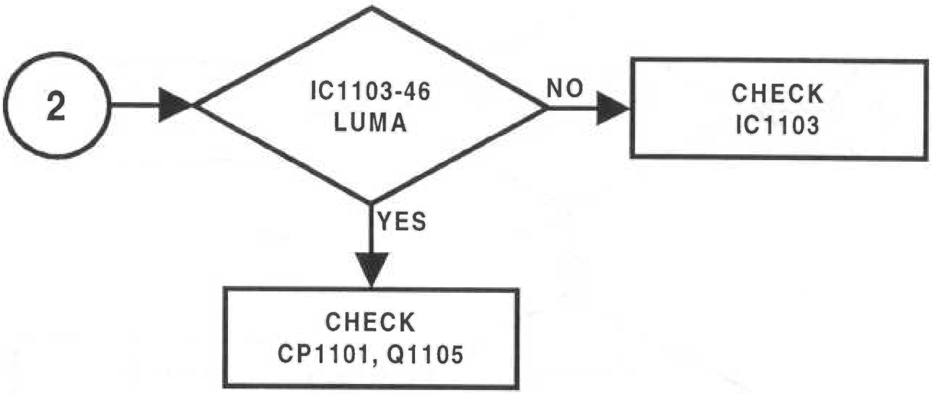

NO PLAY CHROMA
RECORD CHROMA
NG
SEE FLOW "NO RECORD CHROMA"
OK
PLAY LUMA
NG
SEE FLOW "NO PLAY LUMA (VIDEO)"
OK
SET SELECT SW TO "VCR" AND SET PLAY MODE
IC201-60 CHROMA
NO
IC203-27 FM SIGNAL
NO
CHECK IC203
YES
CHECK Q213, Q214, C304, C307, R267
YES
IC201-15 CHROMA
NO
CHECK IC201
YES
1

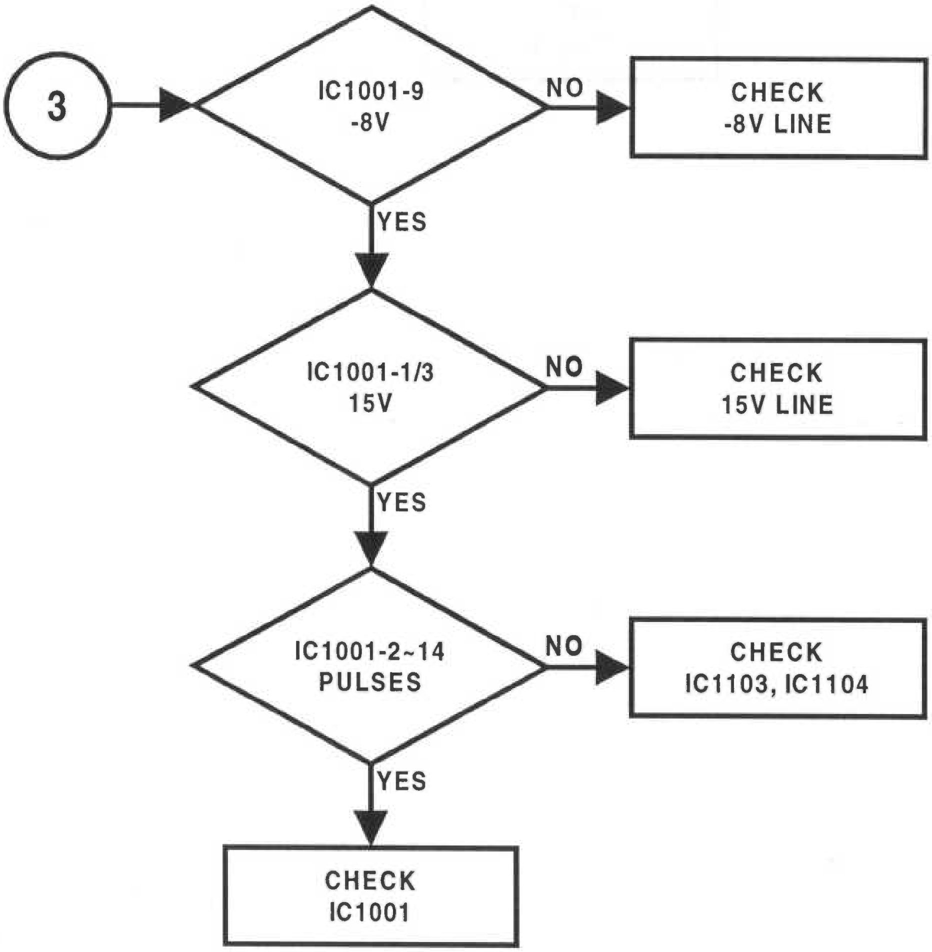

1
IC201-17 CHROMA
NO
CHECK DL201, C217, R212, R213
YES
IC201-27 CHROMA
NO
CHECK IC201
YES
COMPLETED


NO PICTURE
IS RANDAM NOISE SEEN
NO
YES
IC201-35 LUMA
NO
2
YES
SEE FLOW "NO RECORD LUMA (VIDEO)"
IC1101-3 CCD OUT (CDS IN)
NO
YES
IC1001-4 CCD OUT
NO
3
YES
CHECK Q1001, C1101
IC1102-31 CDS OUT
NO
YES
IC1101-34 CDS OUT
NO
4
YES
CHECK CDS LINE
1

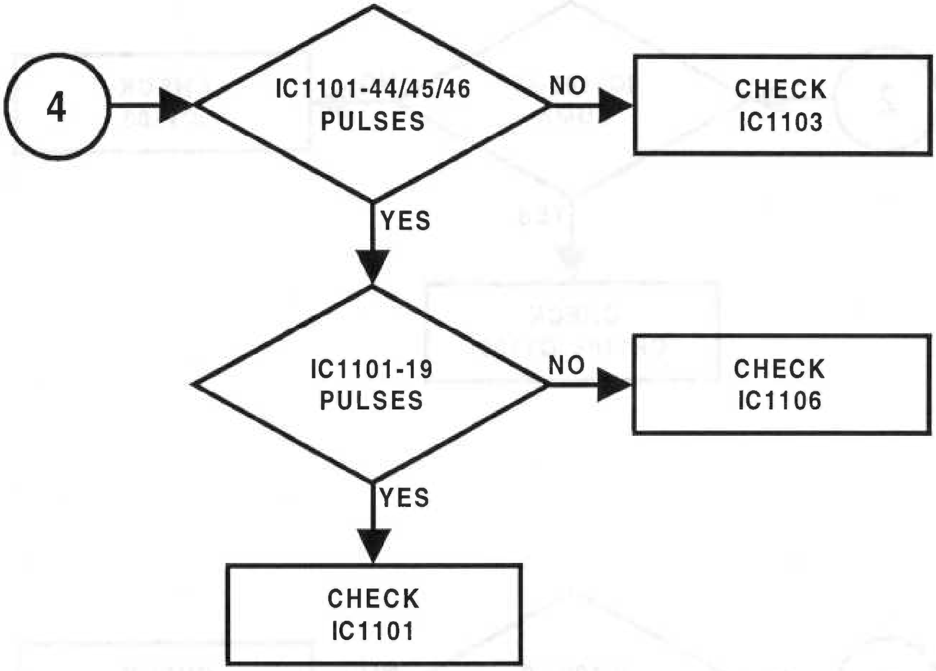
TROUBLESHOOTING GUIDES (Continued)


1
IC1102-3~ 5/ 7~10/46/47 PULSES
NO
IC1102-42 PULSE
NO
CHECK IC1103
YES
YES
IC1102-39 0V
NO
CHECK GROUND LINE
YES
IC1102-21 3V
NO
CHECK R1105, R1106, C1121, C5V LINE
YES
CHECK IC1102
IC1103-26/27 28.6MHz
NO
CHECK X1101, R1130, R1131, R1144, C1144, C1145, C1146
YES
IC1103-5/6/7 PULSE
NO
IC1106-18 PULSE
NO
CHECK IC1106
YES
YES
CHECK IC1103
5

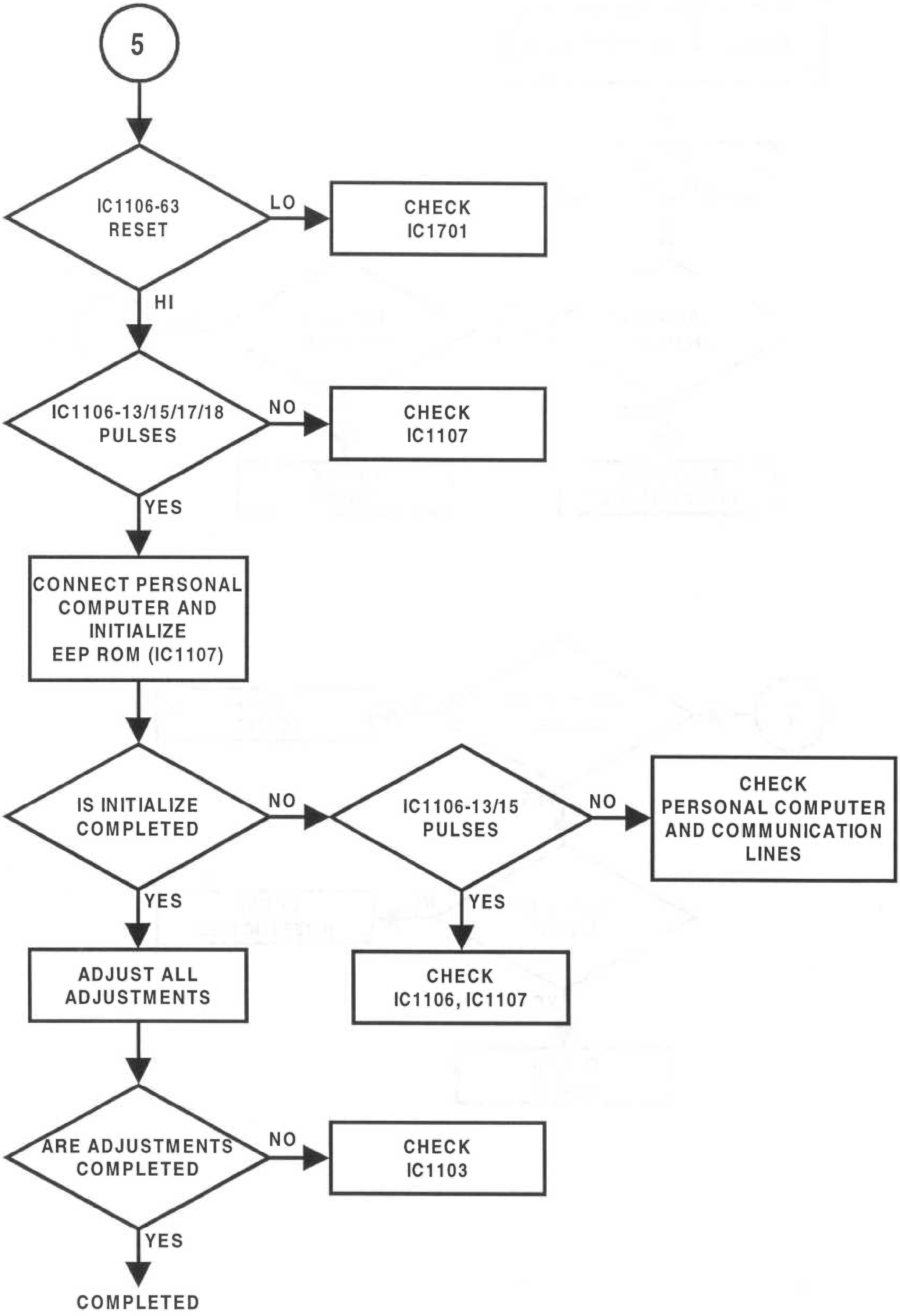

2
IC1103-46
LUMA
NO
CHECK
IC1103
YES
CHECK
CP1101, Q1105

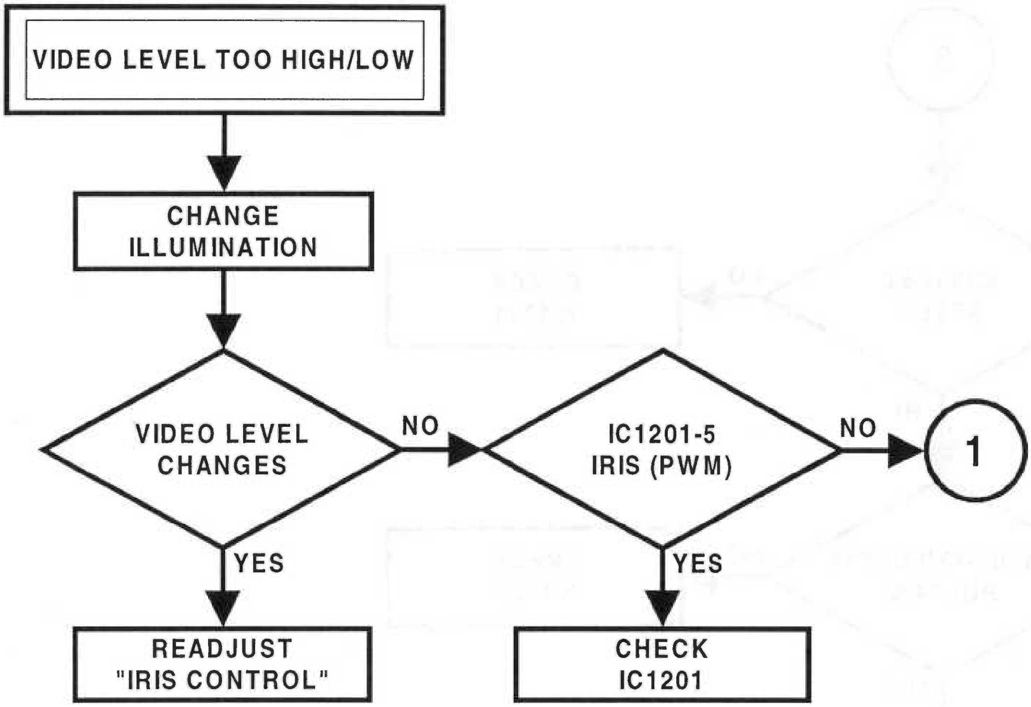

3
IC1001-9
-8V
NO
CHECK
-8V LINE
YES
IC1001-1/3
15V
NO
CHECK
15V LINE
YES
IC1001-2~14
PULSES
NO
CHECK
IC1103, IC1104
YES
CHECK
IC1001

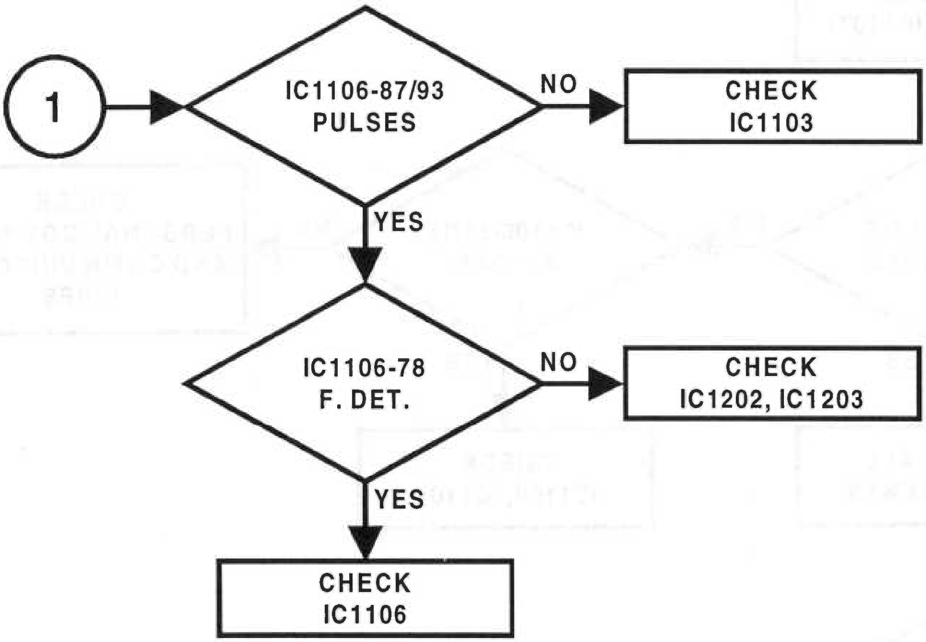
TROUBLESHOOTING GUIDES (Continued)


4
IC1101-44/45/46 PULSES
NO
CHECK IC1103
YES
IC1101-19 PULSES
NO
CHECK IC1106
YES
CHECK IC1101

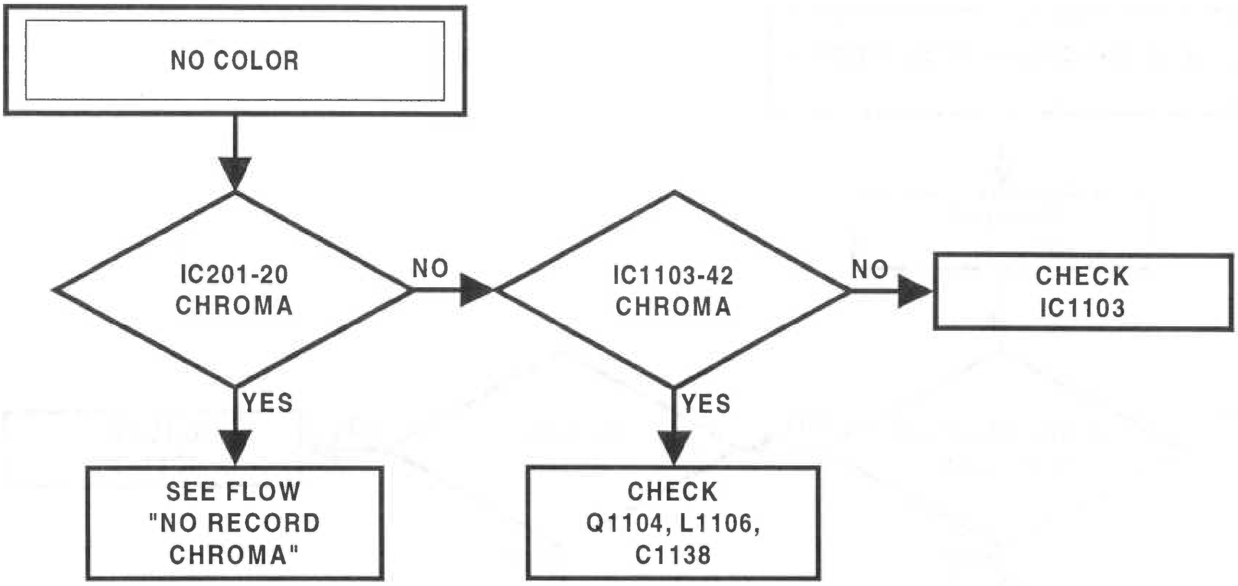
TROUBLESHOOTING GUIDES (Continued)

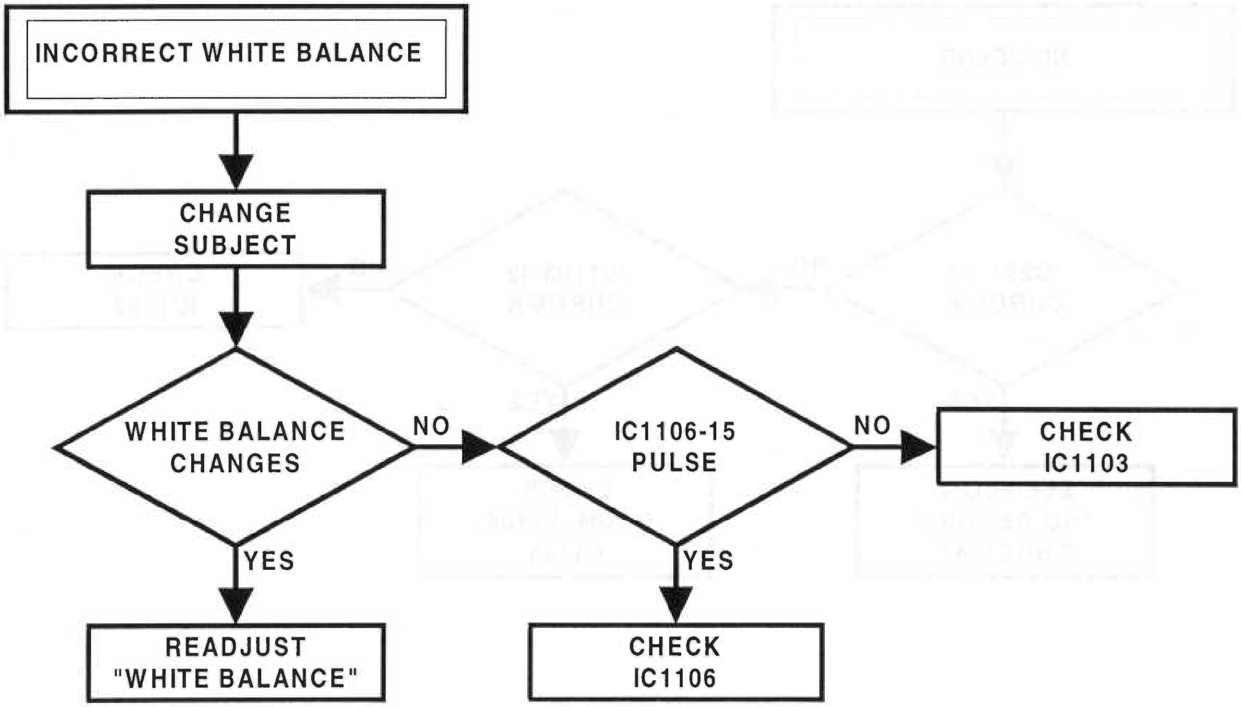

5
IC1106-63 RESET
LO
CHECK IC1701
HI
IC1106-13/15/17/18 PULSES
NO
CHECK IC1107
YES
CONNECT PERSONAL COMPUTER AND INITIALIZE EEP ROM (IC1107)
IS INITIALIZE COMPLETED
NO
IC1106-13/15 PULSES
NO
CHECK PERSONAL COMPUTER AND COMMUNICATION LINES
YES
CHECK IC1106, IC1107
YES
ADJUST ALL ADJUSTMENTS
ARE ADJUSTMENTS COMPLETED
NO
CHECK IC1103
YES
COMPLETED


VIDEO LEVEL TOO HIGH/LOW
CHANGE ILLUMINATION
VIDEO LEVEL CHANGES
NO
YES
READJUST "IRIS CONTROL"
IC1201-5 IRIS (PWM)
NO
1
YES
CHECK IC1201

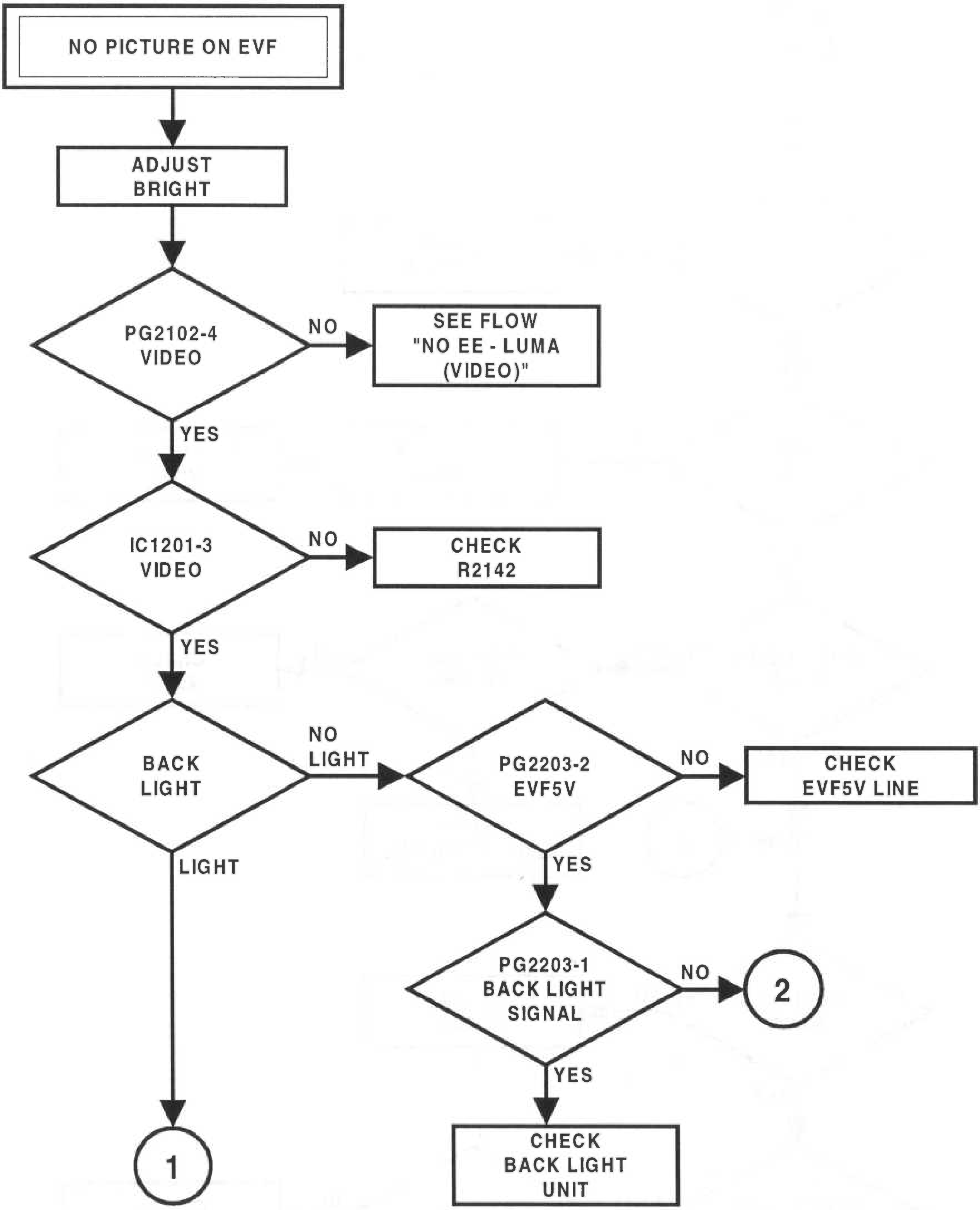

1
IC1106-87/93 PULSES
NO
CHECK IC1103
YES
IC1106-78 F. DET.
NO
CHECK IC1202, IC1203
YES
CHECK IC1106

TROUBLESHOOTING GUIDES (Continued)

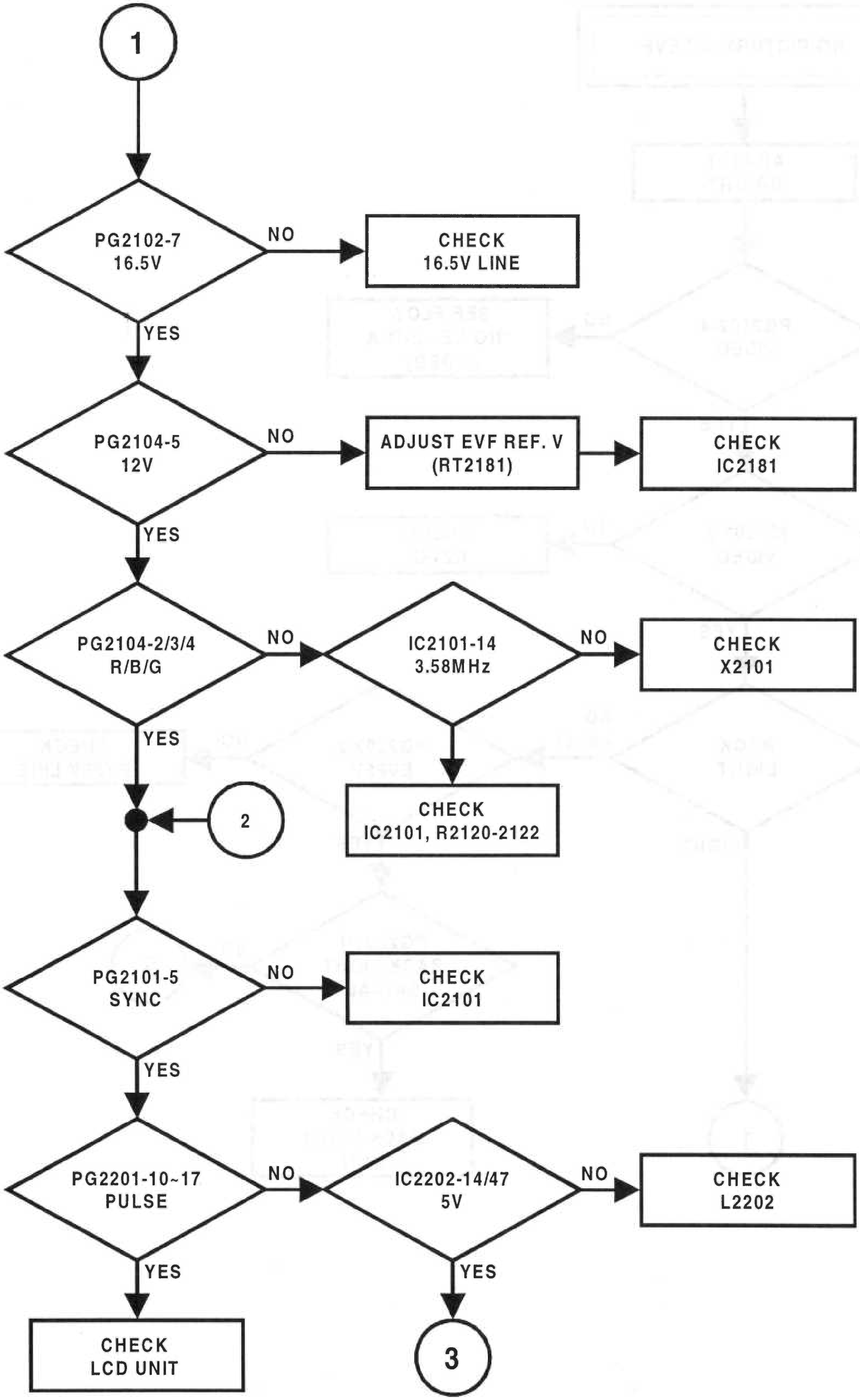

NO COLOR
IC201-20 CHROMA
NO
YES
SEE FLOW "NO RECORD CHROMA"
IC1103-42 CHROMA
NO
YES
CHECK IC1103
CHECK Q1104, L1106, C1138

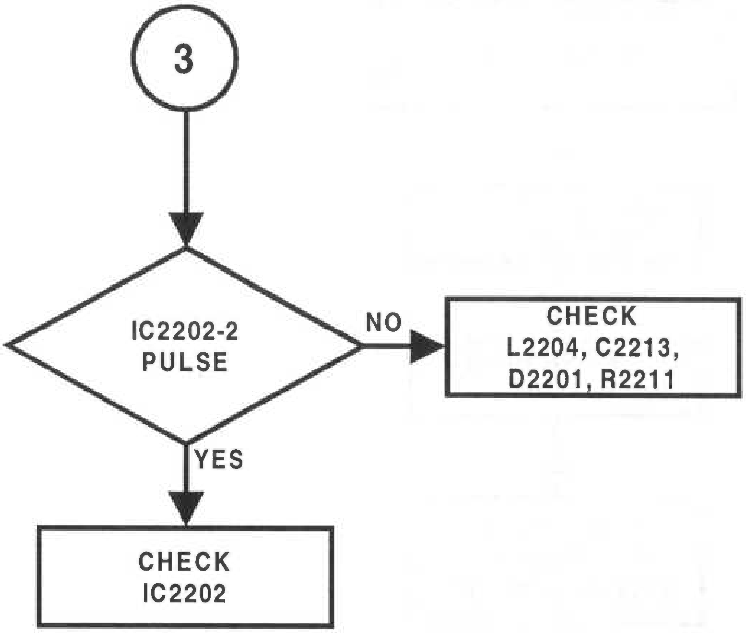

INCORRECT WHITE BALANCE
CHANGE SUBJECT
WHITE BALANCE CHANGES
NO
YES
READJUST "WHITE BALANCE"
IC1106-15 PULSE
NO
YES
CHECK IC1106
CHECK IC1103

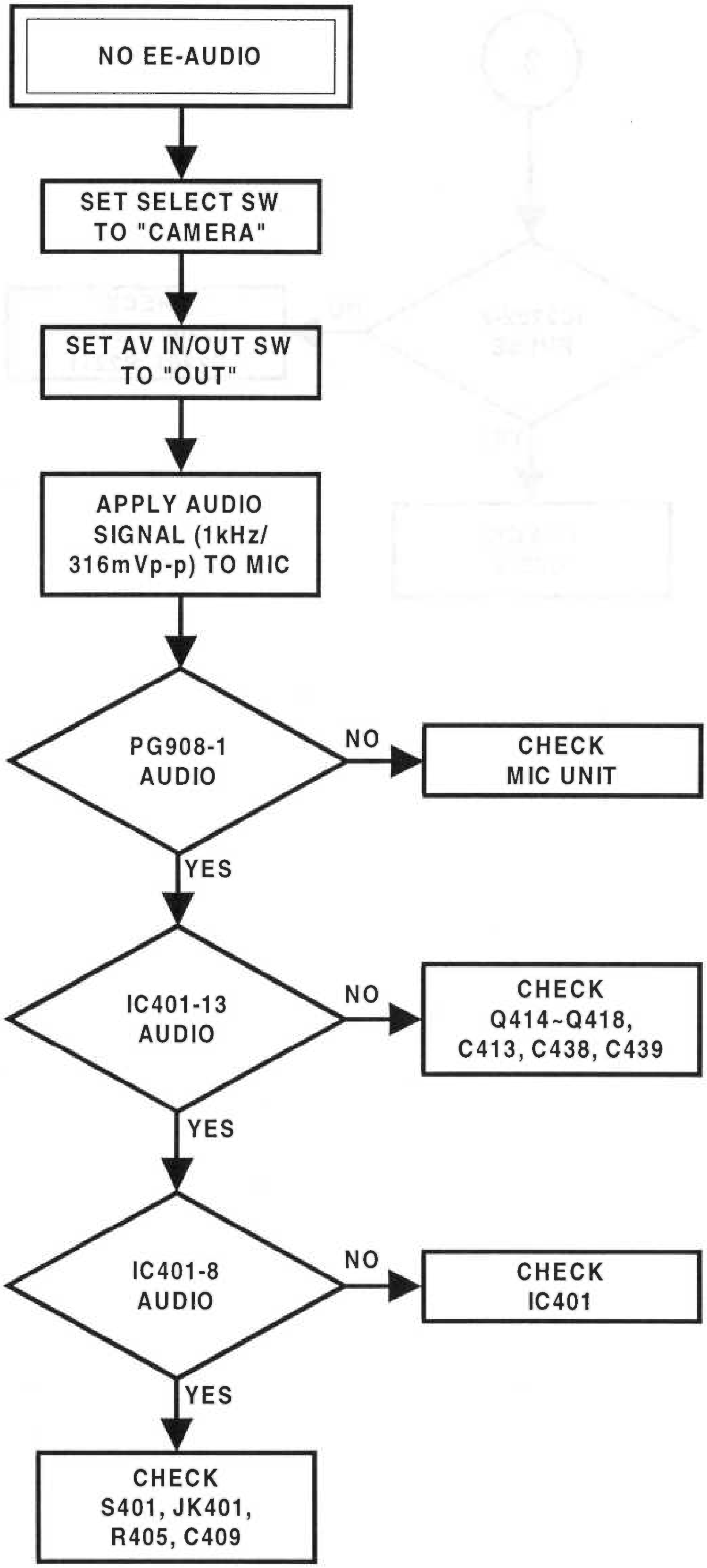
TROUBLESHOOTING GUIDES (Continued)

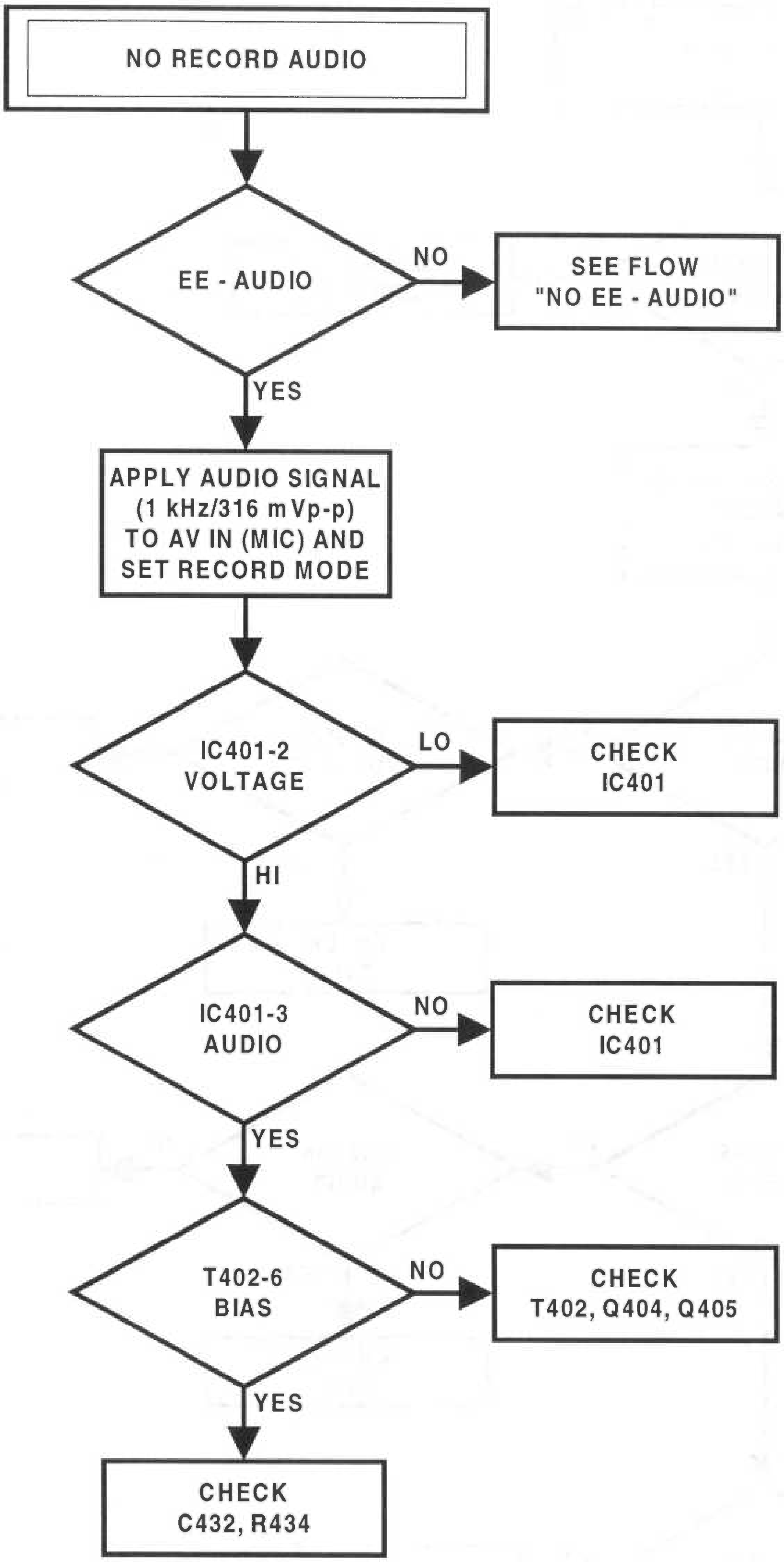

NO PICTURE ON EVF
ADJUST BRIGHT
PG2102-4 VIDEO
NO
SEE FLOW "NO EE - LUMA (VIDEO)"
YES
IC1201-3 VIDEO
NO
CHECK R2142
YES
BACK LIGHT
NO LIGHT
PG2203-2 EVF5V
NO
CHECK EVF5V LINE
YES
LIGHT
PG2203-1 BACK LIGHT SIGNAL
NO
2
YES
CHECK BACK LIGHT UNIT
1

TROUBLESHOOTING GUIDES (Continued)

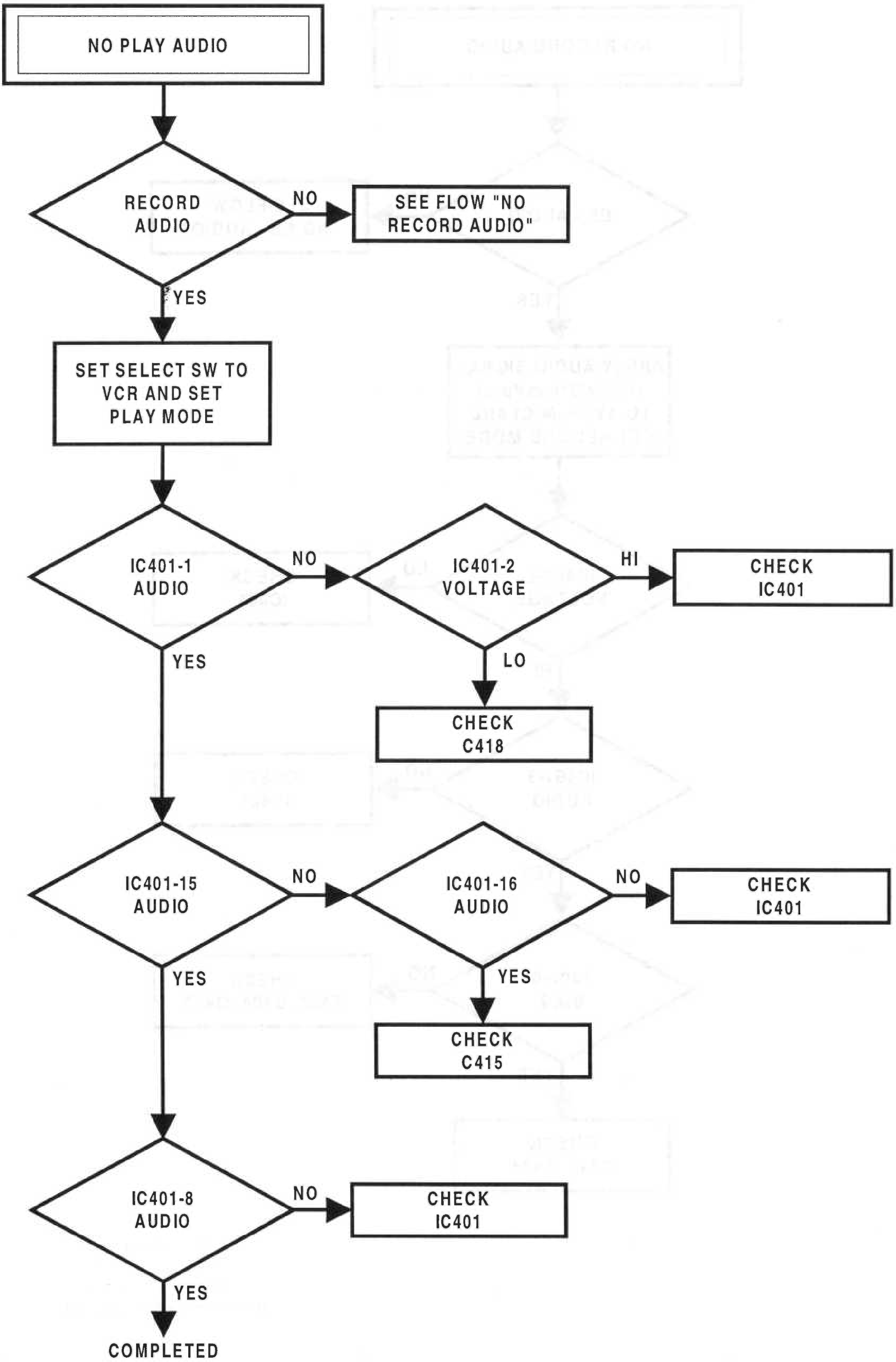

1
PG2102-7
16.5V
NO
CHECK
16.5V LINE
YES
PG2104-5
12V
NO
ADJUST EVF REF. V
(RT2181)
CHECK
IC2181
YES
PG2104-2/3/4
R/B/G
NO
IC2101-14
3.58MHz
NO
CHECK
X2101
CHECK
IC2101, R2120-2122
YES
2
PG2101-5
SYNC
NO
CHECK
IC2101
YES
PG2201-10~17
PULSE
NO
IC2202-14/47
5V
NO
CHECK
L2202
YES
CHECK
LCD UNIT
YES
3

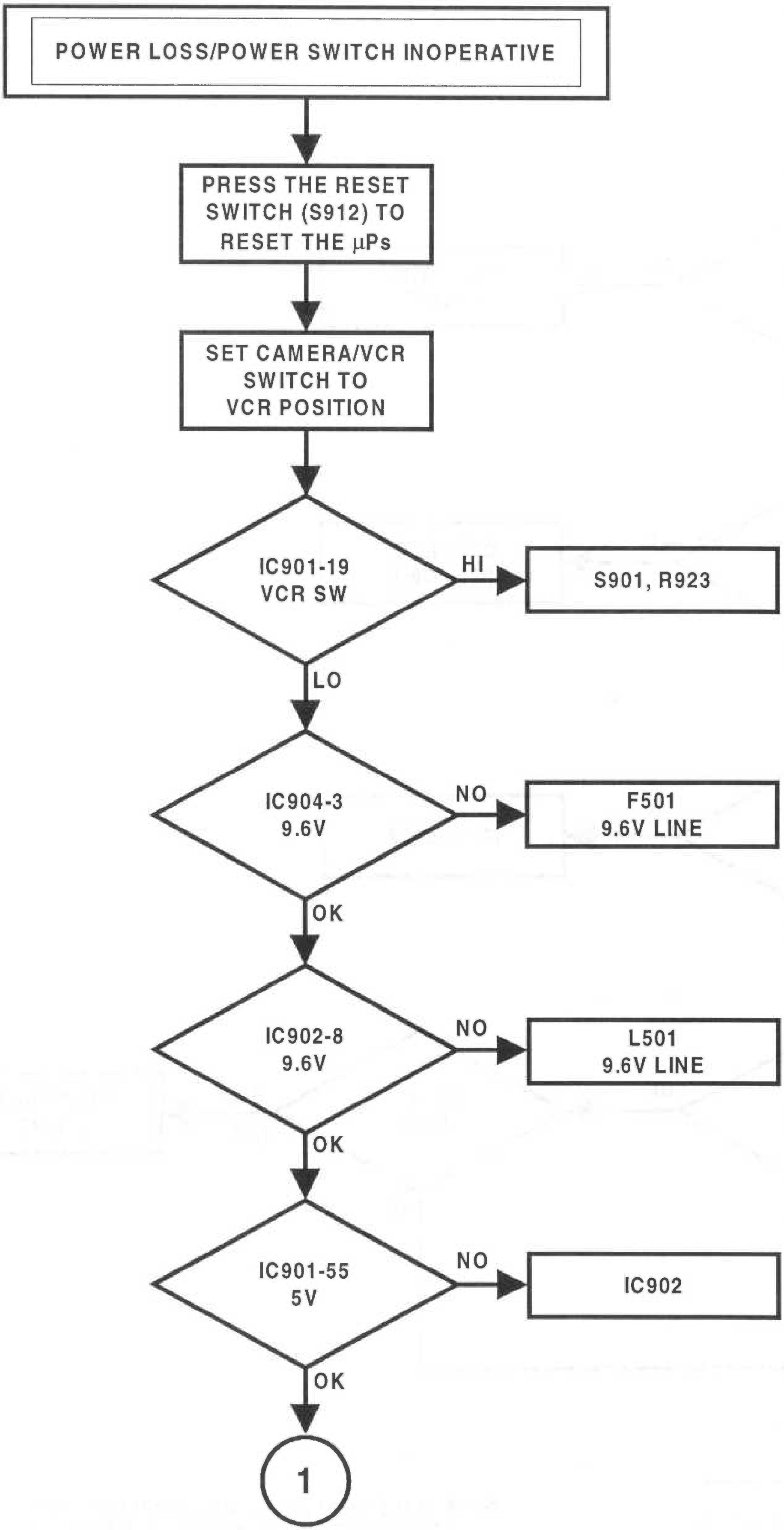

3
IC2202-2 PULSE
NO
CHECK L2204, C2213, D2201, R2211
YES
CHECK IC2202

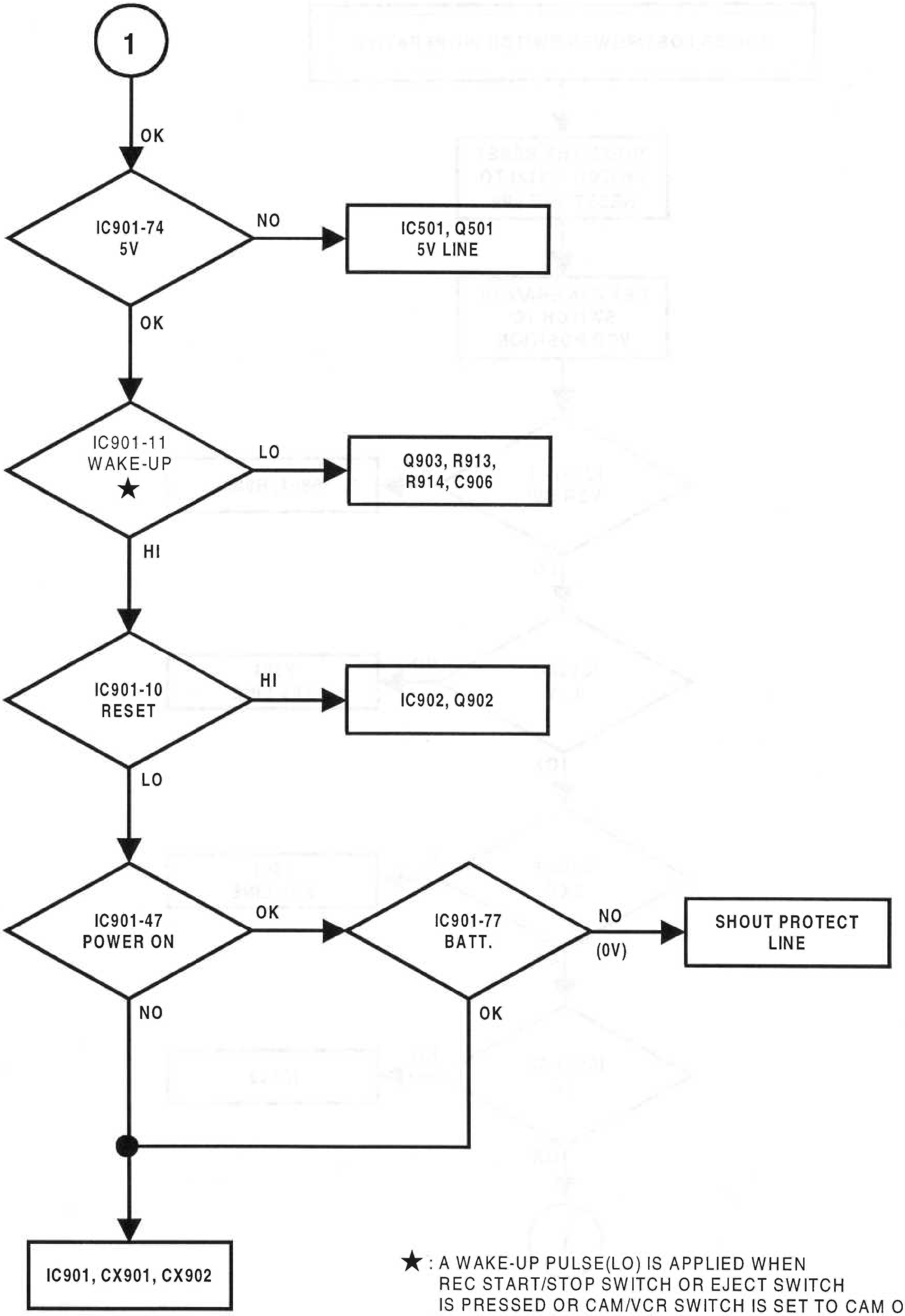

NO EE-AUDIO
SET SELECT SW TO "CAMERA"
SET AV IN/OUT SW TO "OUT"
APPLY AUDIO SIGNAL (1kHz/ 316mVp-p) TO MIC
PG908-1 AUDIO
NO
CHECK MIC UNIT
YES
IC401-13 AUDIO
NO
CHECK Q414~Q418, C413, C438, C439
YES
IC401-8 AUDIO
NO
CHECK IC401
YES
CHECK S401, JK401, R405, C409


NO RECORD AUDIO
EE - AUDIO
NO
SEE FLOW "NO EE - AUDIO"
YES
APPLY AUDIO SIGNAL (1 kHz/316 mVp-p) TO AV IN (MIC) AND SET RECORD MODE
IC401-2 VOLTAGE
LO
CHECK IC401
HI
IC401-3 AUDIO
NO
CHECK IC401
YES
T402-6 BIAS
NO
CHECK T402, Q404, Q405
YES
CHECK C432, R434

TROUBLESHOOTING GUIDES (Continued)

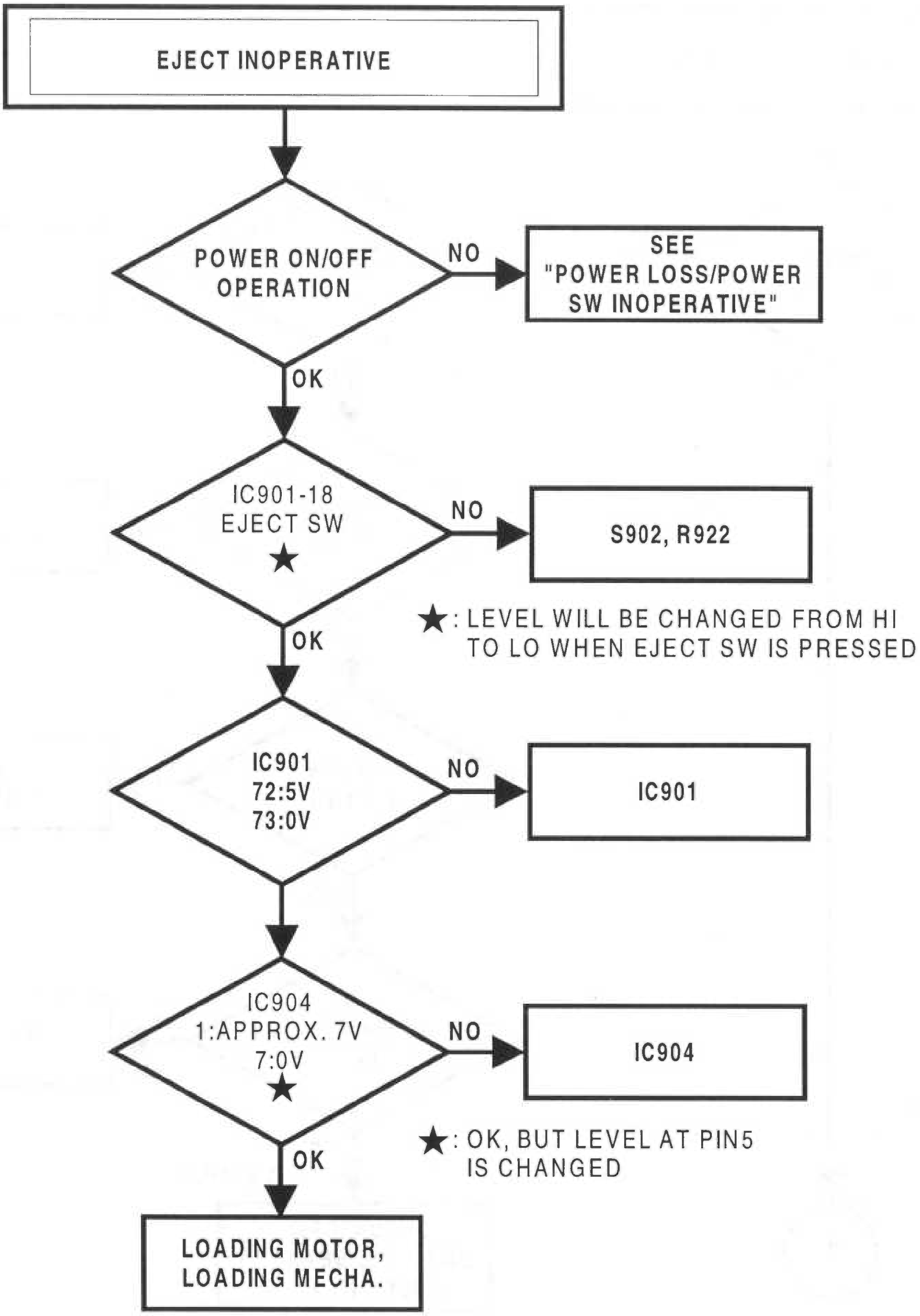

NO PLAY AUDIO
RECORD AUDIO
NO
SEE FLOW "NO RECORD AUDIO"
YES
SET SELECT SW TO VCR AND SET PLAY MODE
IC401-1 AUDIO
NO
IC401-2 VOLTAGE
HI
CHECK IC401
LO
CHECK C418
YES
IC401-15 AUDIO
NO
IC401-16 AUDIO
NO
CHECK IC401
YES
CHECK C415
YES
IC401-8 AUDIO
NO
CHECK IC401
YES
COMPLETED


POWER LOSS/POWER SWITCH INOPERATIVE
PRESS THE RESET SWITCH (S912) TO RESET THE µPs
SET CAMERA/VCR SWITCH TO VCR POSITION
IC901-19 VCR SW
HI
S901, R923
LO
IC904-3 9.6V
NO
F501 9.6V LINE
OK
IC902-8 9.6V
NO
L501 9.6V LINE
OK
IC901-55 5V
NO
IC902
OK
1

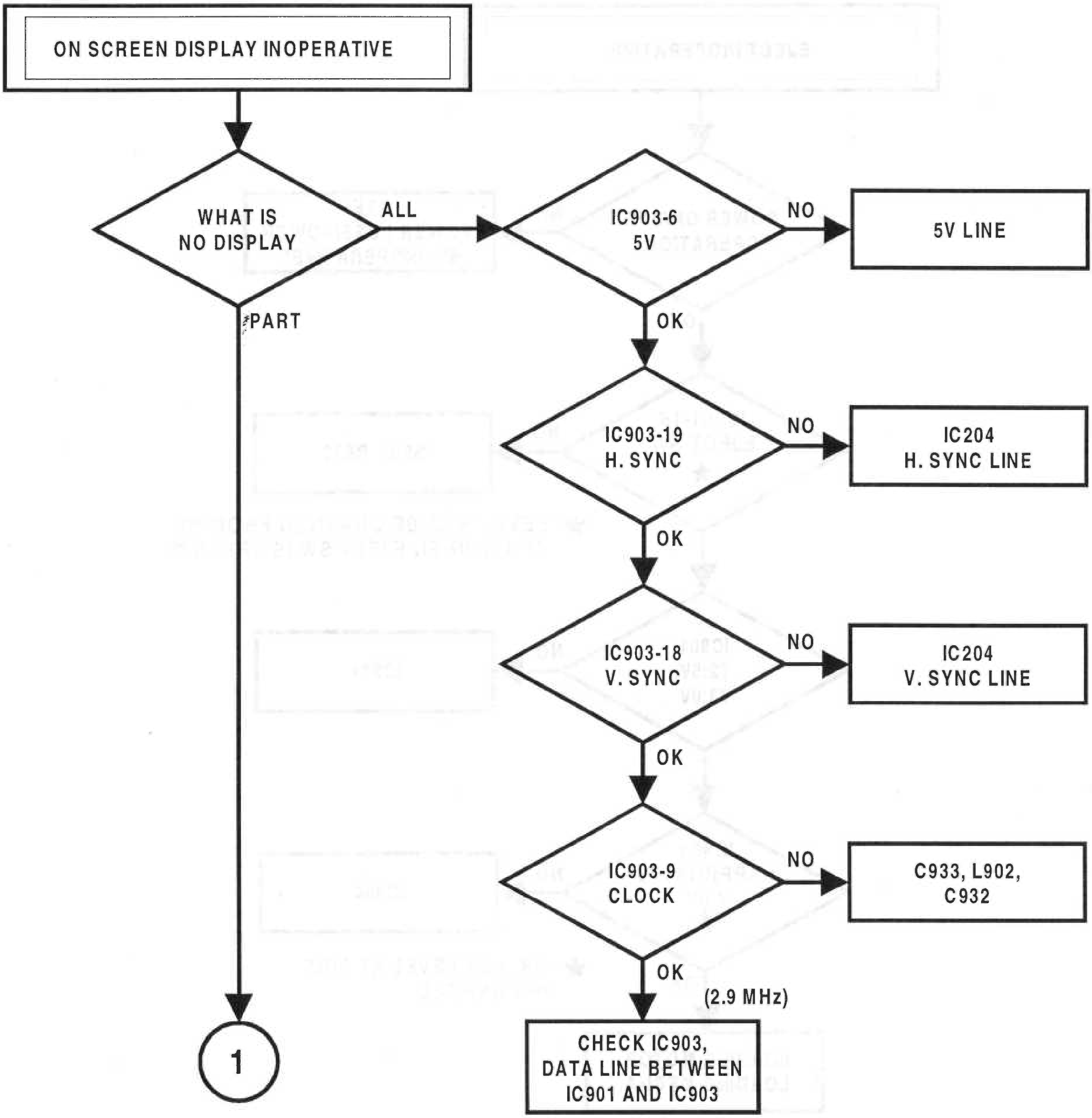

1
OK
IC901-74
5V
NO
IC501, Q501
5V LINE
OK
IC901-11
WAKE-UP
★
LO
Q903, R913,
R914, C906
HI
IC901-10
RESET
HI
IC902, Q902
LO
IC901-47
POWER ON
OK
IC901-77
BATT.
NO
(0V)
SHOUT PROTECT
LINE
NO
OK
IC901, CX901, CX902

★ : A WAKE-UP PULSE(LO) IS APPLIED WHEN
REC START/STOP SWITCH OR EJECT SWITCH
IS PRESSED OR CAM/VCR SWITCH IS SET TO CAM OR VCR

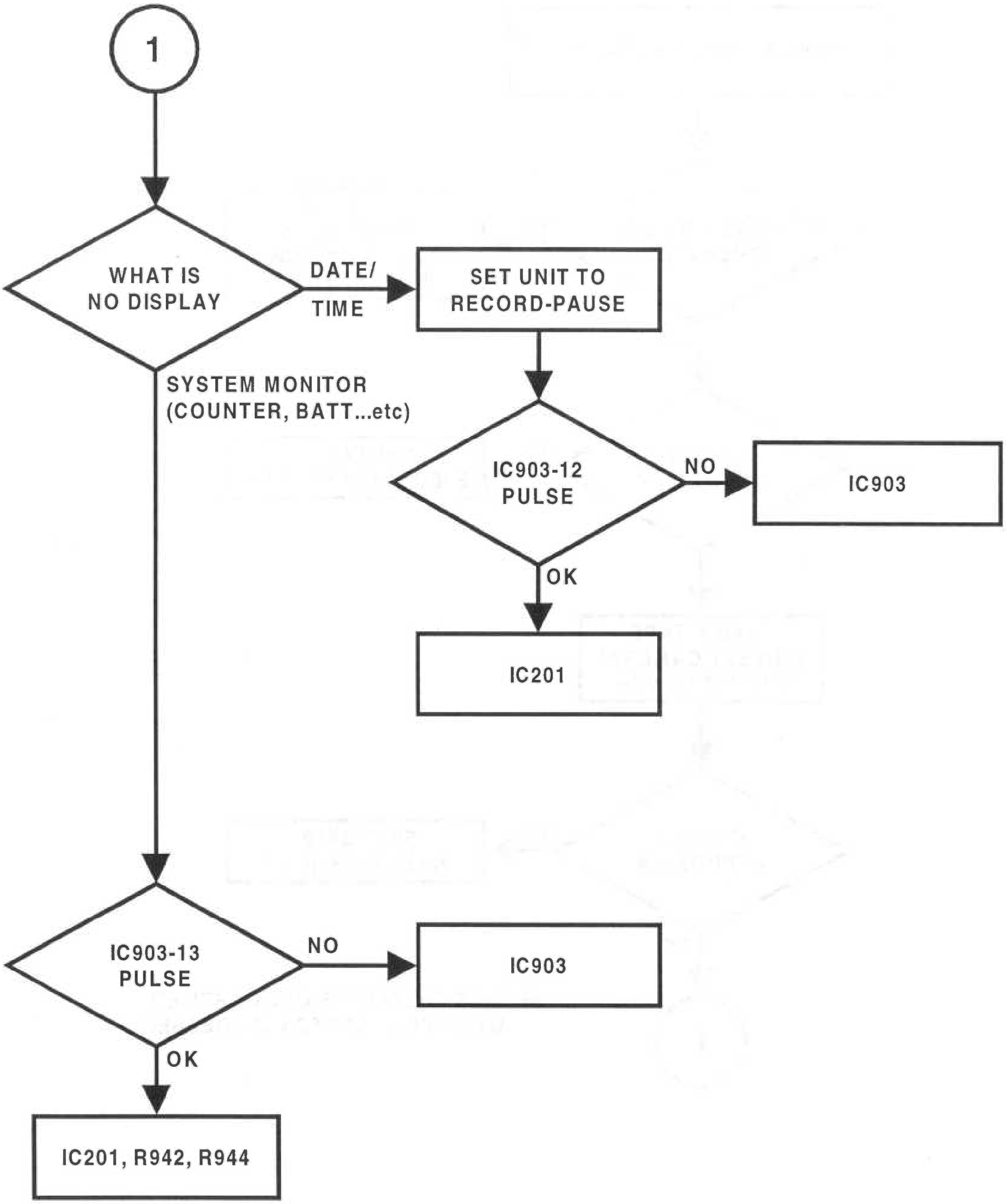
TROUBLESHOOTING GUIDES (Continued)

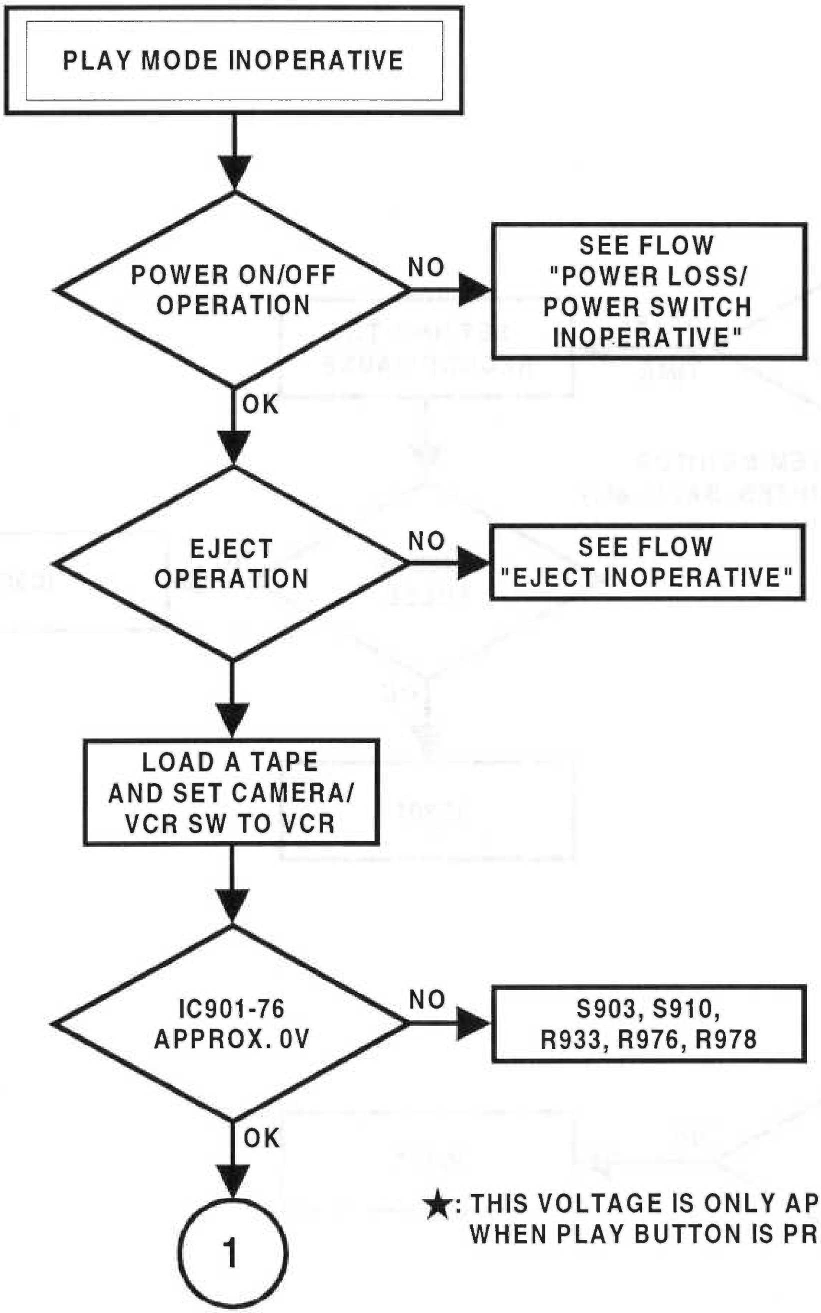

EJECT INOPERATIVE
POWER ON/OFF OPERATION
NO
SEE "POWER LOSS/POWER SW INOPERATIVE"
OK
IC901-18 EJECT SW ★
NO
S902, R922
★: LEVEL WILL BE CHANGED FROM HI TO LO WHEN EJECT SW IS PRESSED
OK
IC901 72:5V 73:0V
NO
IC901
IC904 1:APPROX. 7V 7:0V ★
NO
IC904
★: OK, BUT LEVEL AT PIN5 IS CHANGED
OK
LOADING MOTOR, LOADING MECHA.

TROUBLESHOOTING GUIDES (Continued)


ON SCREEN DISPLAY INOPERATIVE
WHAT IS NO DISPLAY
ALL
PART
IC903-6 5V
NO
5V LINE
OK
IC903-19 H. SYNC
NO
IC204 H. SYNC LINE
OK
IC903-18 V. SYNC
NO
IC204 V. SYNC LINE
OK
IC903-9 CLOCK
NO
C933, L902, C932
OK
(2.9 MHz)
CHECK IC903, DATA LINE BETWEEN IC901 AND IC903
1

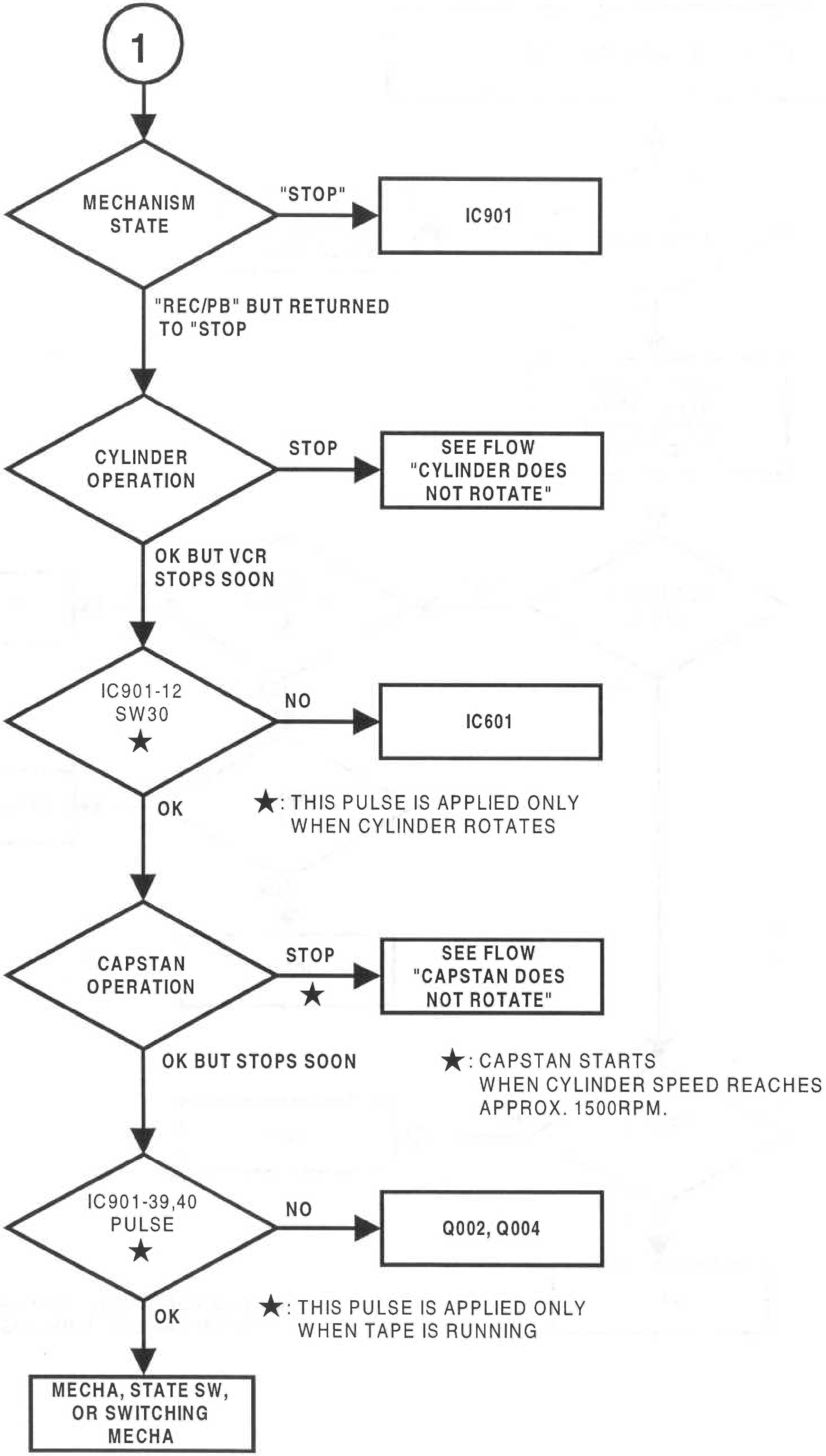
TROUBLESHOOTING GUIDES (Continued)


1
WHAT IS NO DISPLAY
DATE/ TIME
SET UNIT TO RECORD-PAUSE
IC903-12 PULSE
NO
IC903
OK
IC201
SYSTEM MONITOR (COUNTER, BATT...etc)
IC903-13 PULSE
NO
IC903
OK
IC201, R942, R944

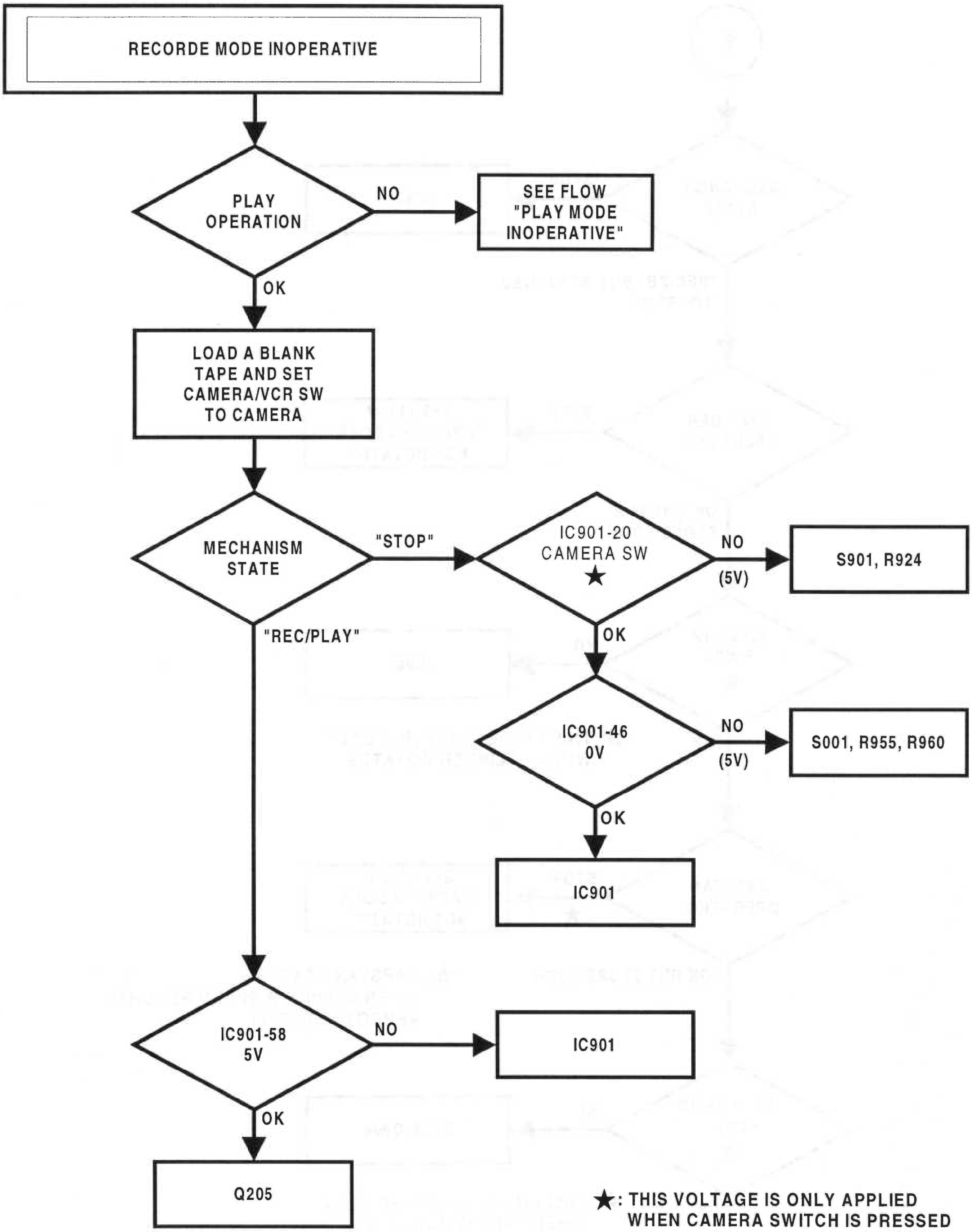

PLAY MODE INOPERATIVE
POWER ON/OFF OPERATION
NO
SEE FLOW "POWER LOSS/ POWER SWITCH INOPERATIVE"
OK
EJECT OPERATION
NO
SEE FLOW "EJECT INOPERATIVE"
LOAD A TAPE AND SET CAMERA/ VCR SW TO VCR
IC901-76 APPROX. 0V
NO
S903, S910, R933, R976, R978
OK
1

★: THIS VOLTAGE IS ONLY APPLIED WHEN PLAY BUTTON IS PRESSED

TROUBLESHOOTING GUIDES (Continued)

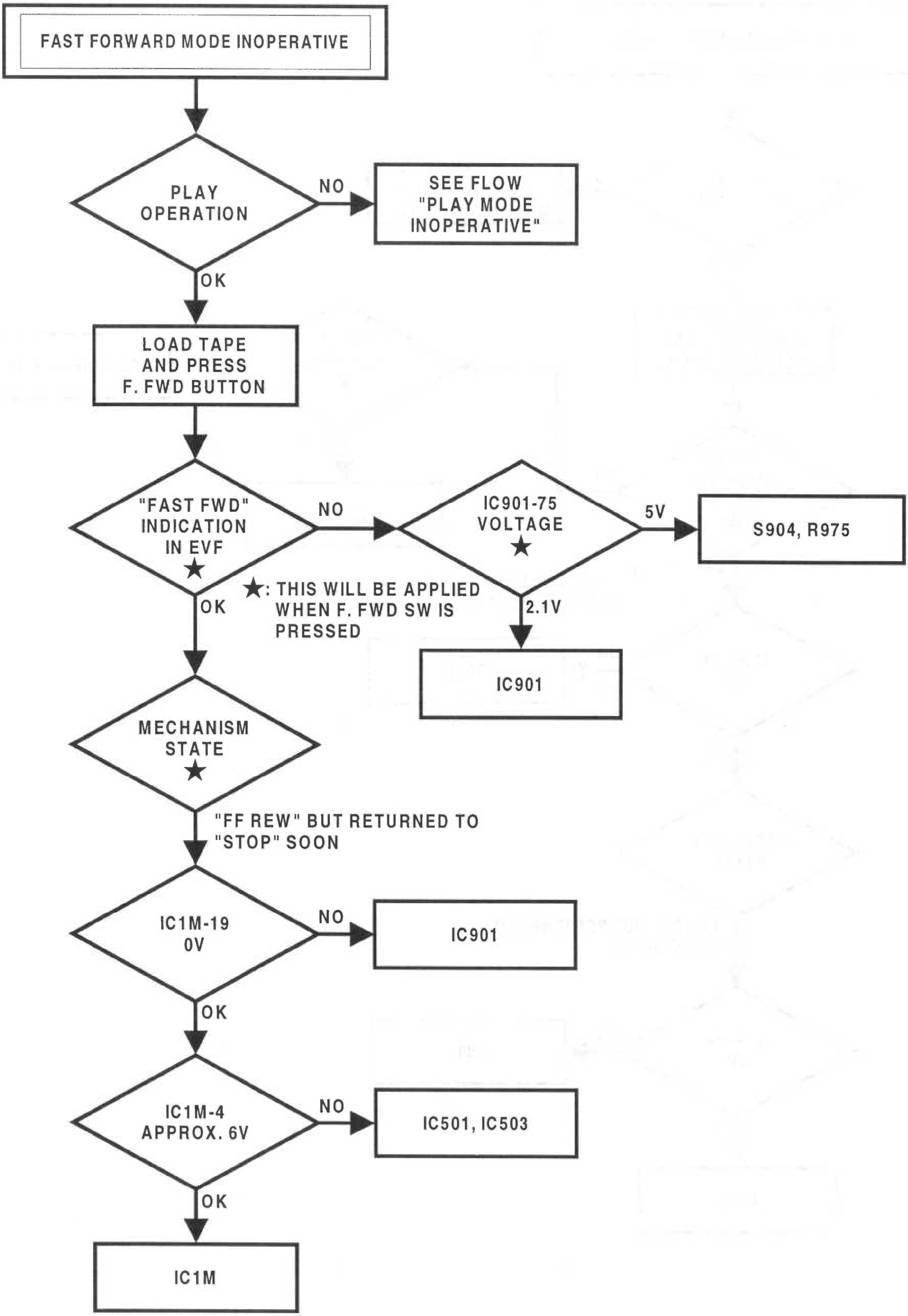

1
MECHANISM STATE
"STOP"
IC901
"REC/PB" BUT RETURNED TO "STOP
CYLINDER OPERATION
STOP
SEE FLOW "CYLINDER DOES NOT ROTATE"
OK BUT VCR STOPS SOON
IC901-12 SW30 ★
NO
IC601
OK
★: THIS PULSE IS APPLIED ONLY WHEN CYLINDER ROTATES
CAPSTAN OPERATION
STOP ★
SEE FLOW "CAPSTAN DOES NOT ROTATE"
OK BUT STOPS SOON
★: CAPSTAN STARTS WHEN CYLINDER SPEED REACHES APPROX. 1500RPM.
IC901-39,40 PULSE ★
NO
Q002, Q004
OK
★: THIS PULSE IS APPLIED ONLY WHEN TAPE IS RUNNING
MECHA, STATE SW, OR SWITCHING MECHA

TROUBLESHOOTING GUIDES (Continued)

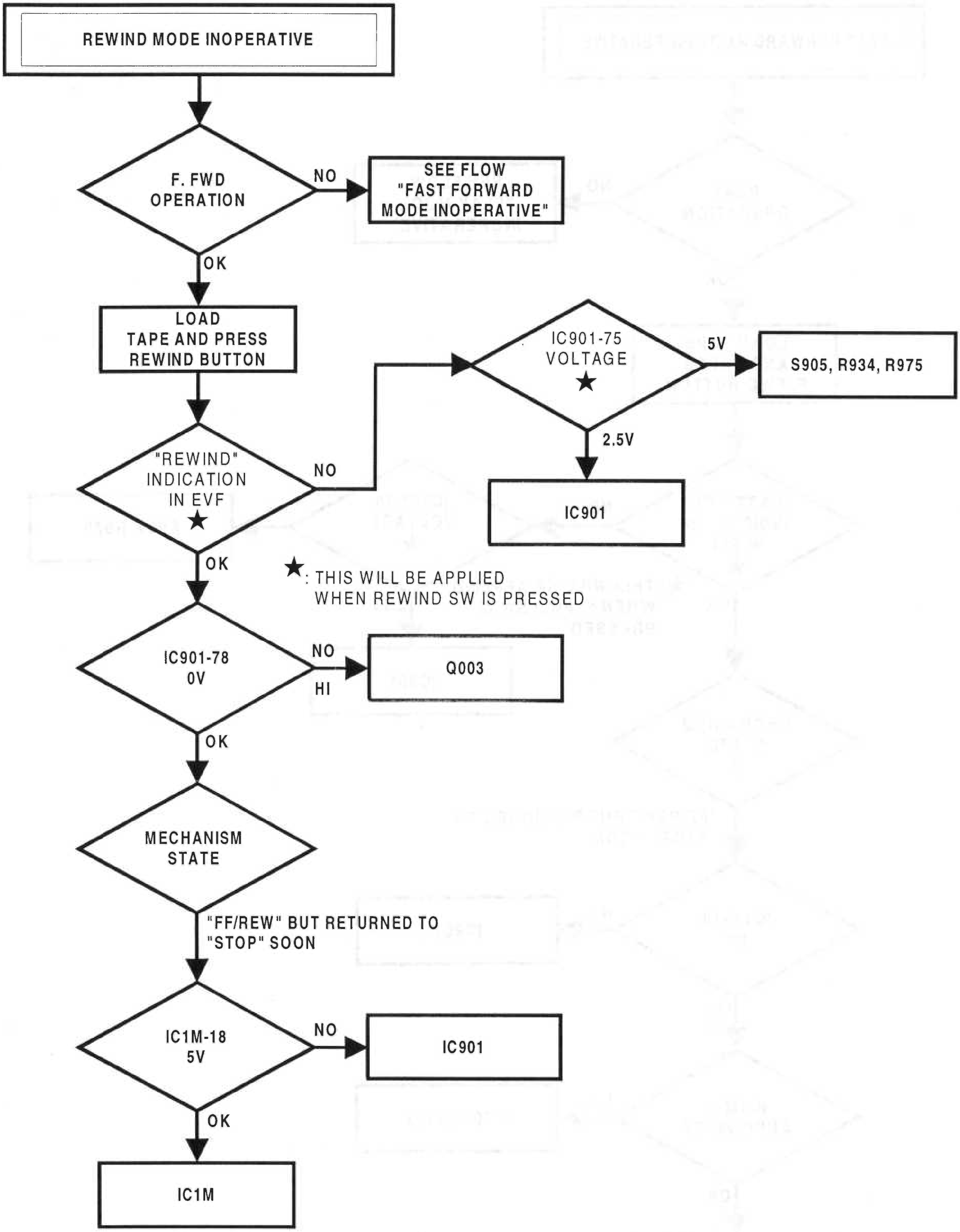

RECORDE MODE INOPERATIVE
PLAY OPERATION
NO
SEE FLOW "PLAY MODE INOPERATIVE"
OK
LOAD A BLANK TAPE AND SET CAMERA/VCR SW TO CAMERA
MECHANISM STATE
"STOP"
IC901-20 CAMERA SW ★
NO
(5V)
S901, R924
OK
IC901-46 0V
NO
(5V)
S001, R955, R960
OK
IC901
"REC/PLAY"
IC901-58 5V
NO
IC901
OK
Q205

★: THIS VOLTAGE IS ONLY APPLIED WHEN CAMERA SWITCH IS PRESSED

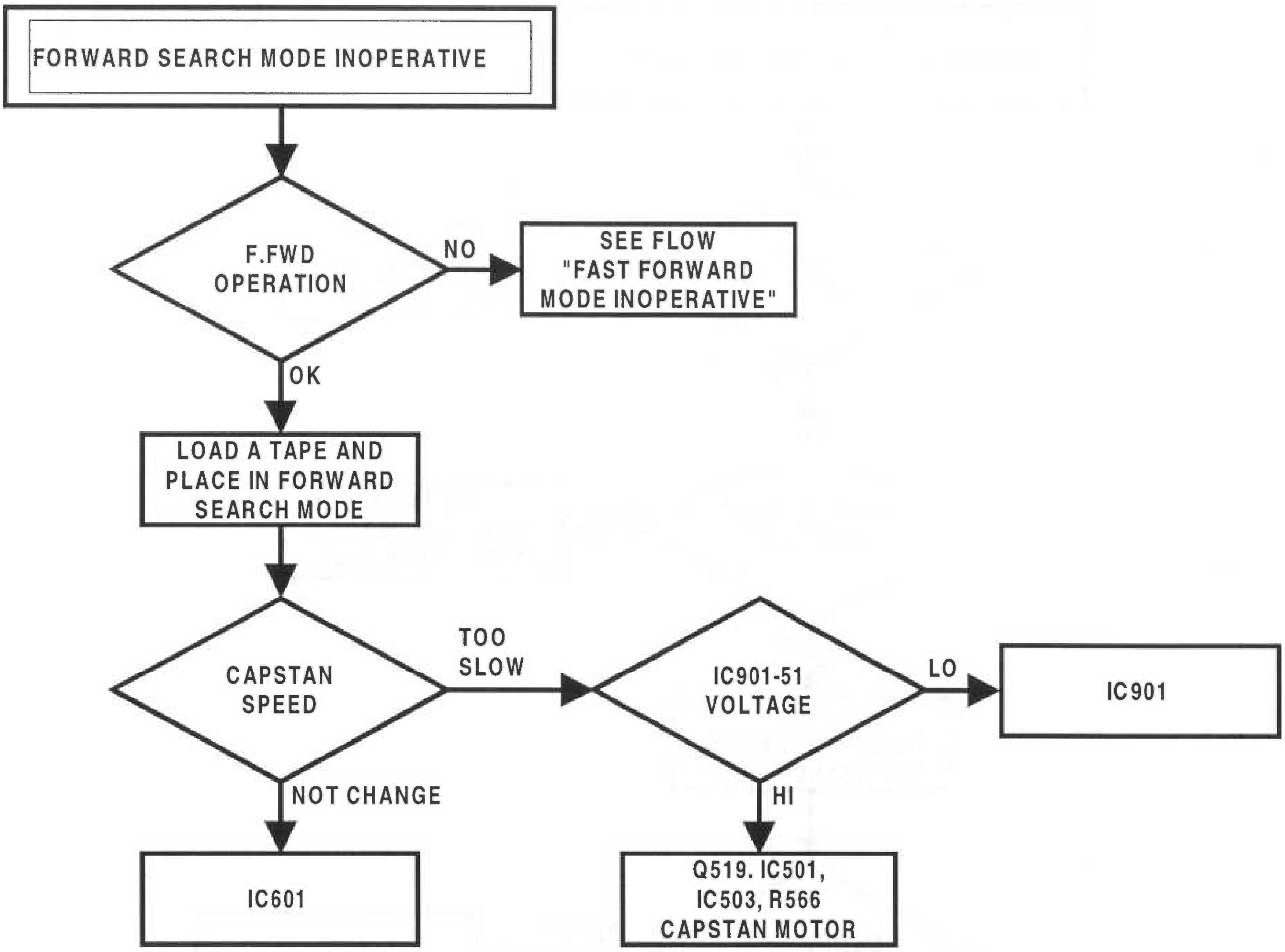
TROUBLESHOOTING GUIDES (Continued)

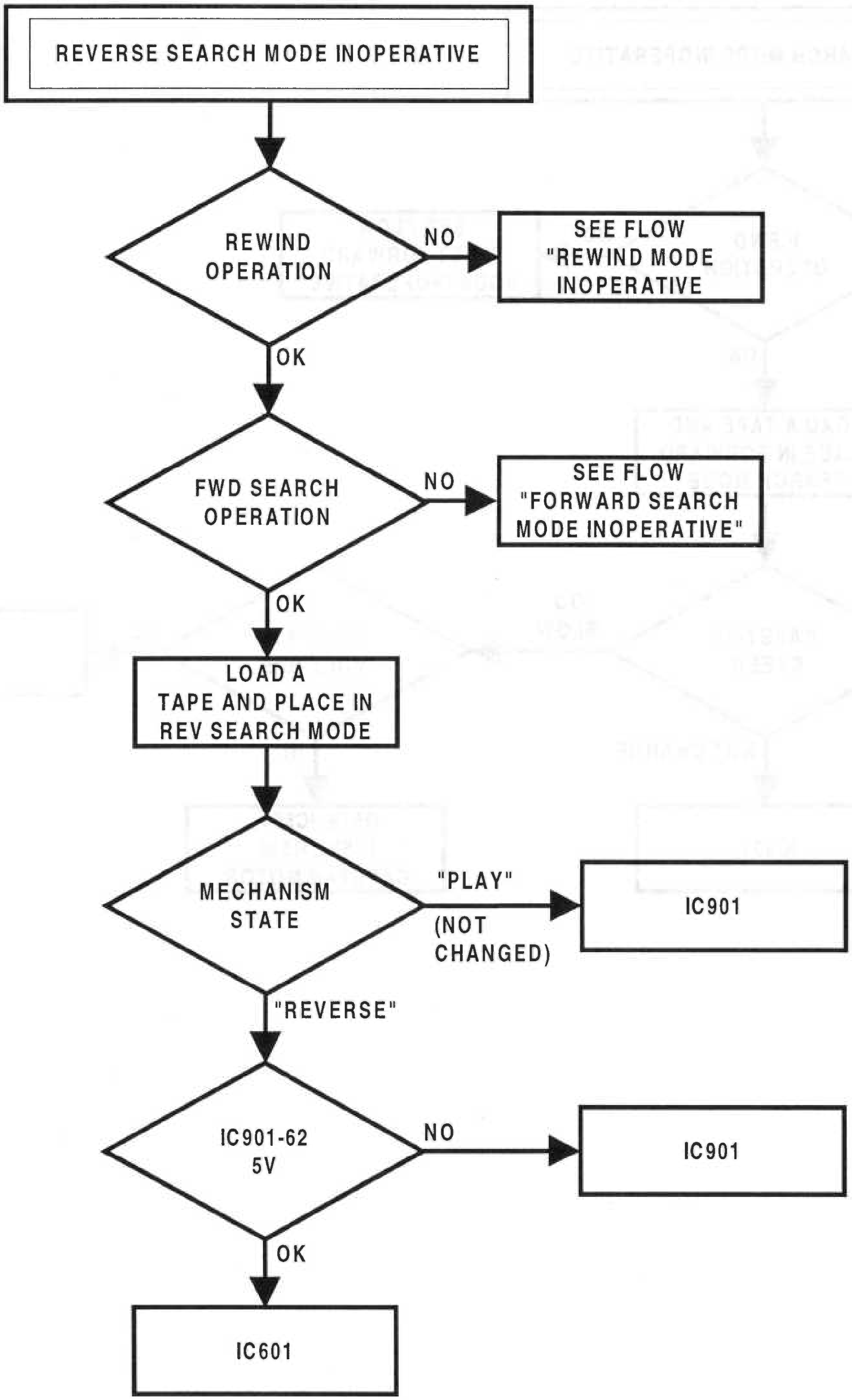

FAST FORWARD MODE INOPERATIVE
PLAY OPERATION
NO
SEE FLOW "PLAY MODE INOPERATIVE"
OK
LOAD TAPE AND PRESS F. FWD BUTTON
"FAST FWD" INDICATION IN EVF ★
NO
IC901-75 VOLTAGE ★
5V
S904, R975
2.1V
IC901
★: THIS WILL BE APPLIED WHEN F. FWD SW IS PRESSED
OK
MECHANISM STATE ★
"FF REW" BUT RETURNED TO "STOP" SOON
IC1M-19 0V
NO
IC901
OK
IC1M-4 APPROX. 6V
NO
IC501, IC503
OK
IC1M

TROUBLESHOOTING GUIDES (Continued)

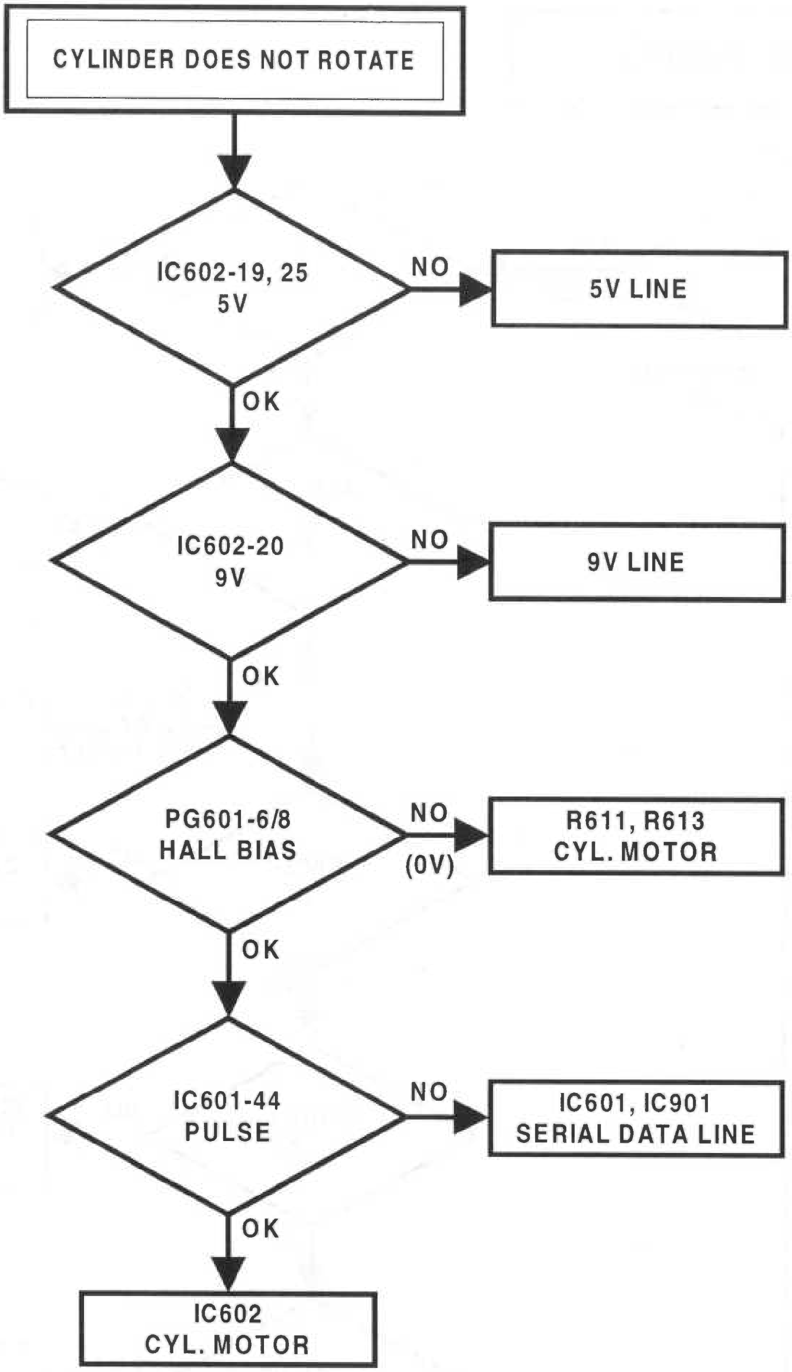

REWIND MODE INOPERATIVE
F. FWD OPERATION
NO
SEE FLOW "FAST FORWARD MODE INOPERATIVE"
OK
LOAD TAPE AND PRESS REWIND BUTTON
"REWIND" INDICATION IN EVF ★
NO
IC901-75 VOLTAGE ★
5V
S905, R934, R975
2.5V
IC901
OK
★: THIS WILL BE APPLIED WHEN REWIND SW IS PRESSED
IC901-78 0V
NO
HI
Q003
OK
MECHANISM STATE
"FF/REW" BUT RETURNED TO "STOP" SOON
IC1M-18 5V
NO
IC901
OK
IC1M

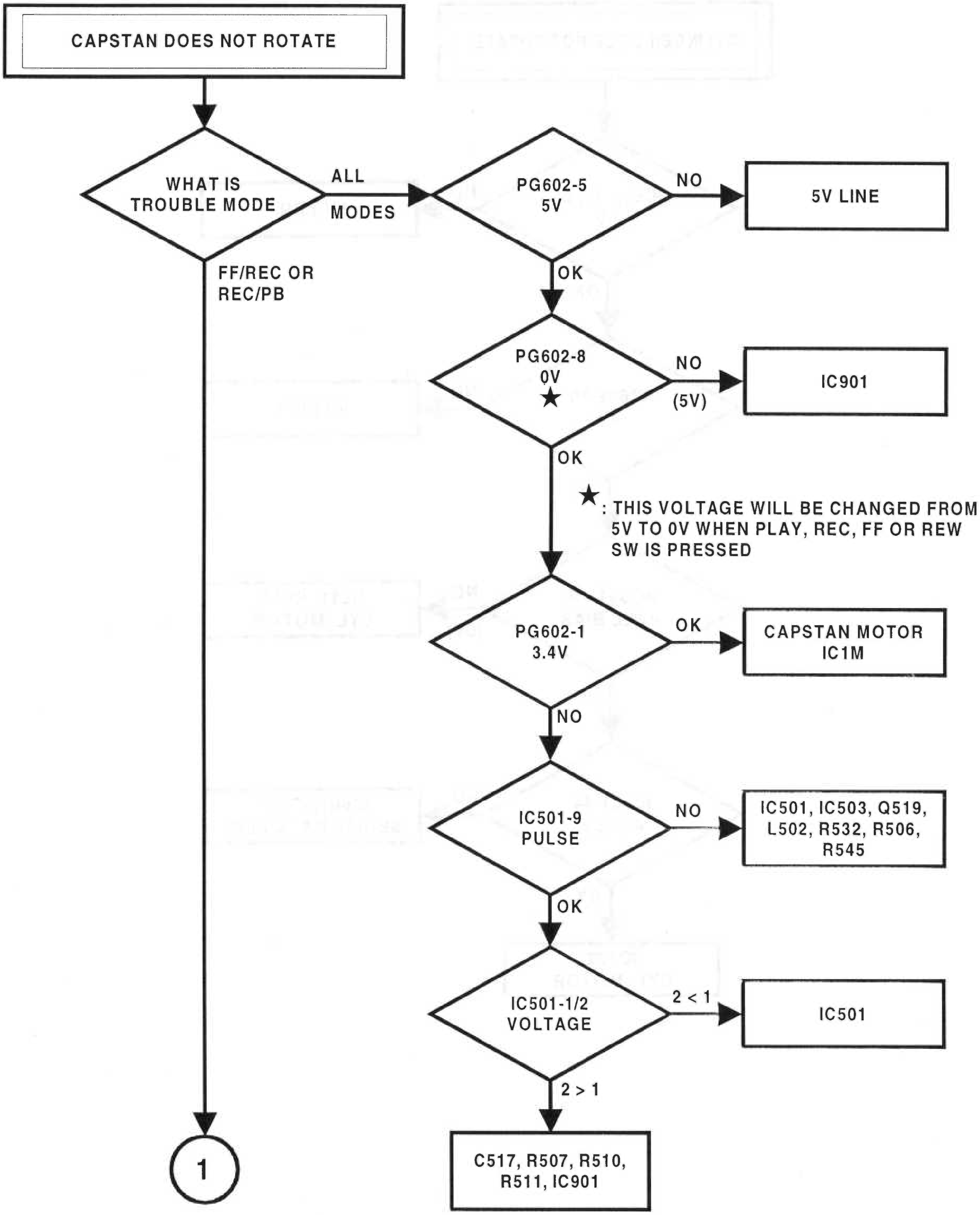
TROUBLESHOOTING GUIDES (Continued)


FORWARD SEARCH MODE INOPERATIVE
F.FWD OPERATION
NO
SEE FLOW "FAST FORWARD MODE INOPERATIVE"
OK
LOAD A TAPE AND PLACE IN FORWARD SEARCH MODE
CAPSTAN SPEED
TOO SLOW
IC901-51 VOLTAGE
LO
IC901
HI
Q519. IC501, IC503, R566 CAPSTAN MOTOR
NOT CHANGE
IC601

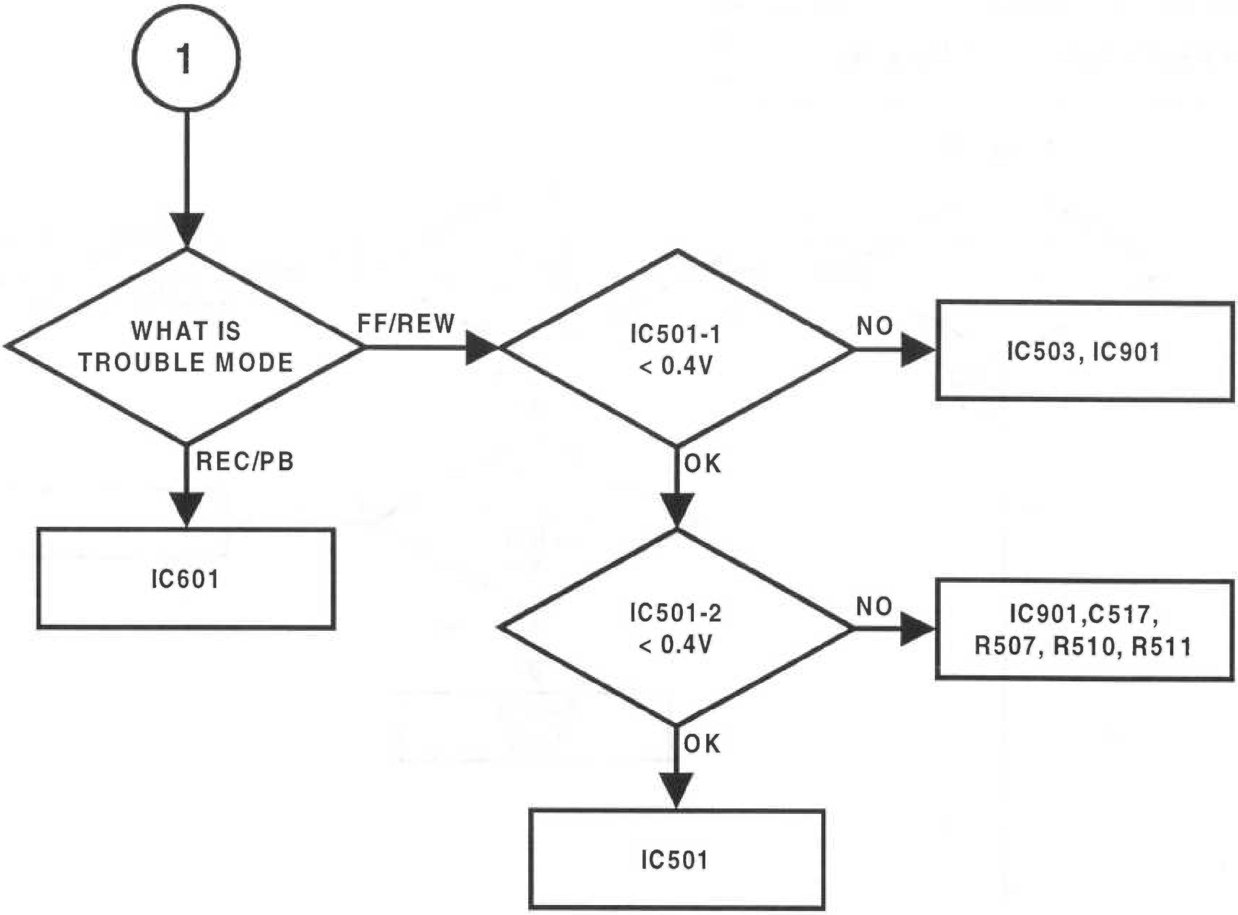

REVERSE SEARCH MODE INOPERATIVE
REWIND OPERATION
NO
SEE FLOW "REWIND MODE INOPERATIVE
OK
FWD SEARCH OPERATION
NO
SEE FLOW "FORWARD SEARCH MODE INOPERATIVE"
OK
LOAD A TAPE AND PLACE IN REV SEARCH MODE
MECHANISM STATE
"PLAY" (NOT CHANGED)
IC901
"REVERSE"
IC901-62 5V
NO
IC901
OK
IC601

TROUBLESHOOTING GUIDES (Continued)

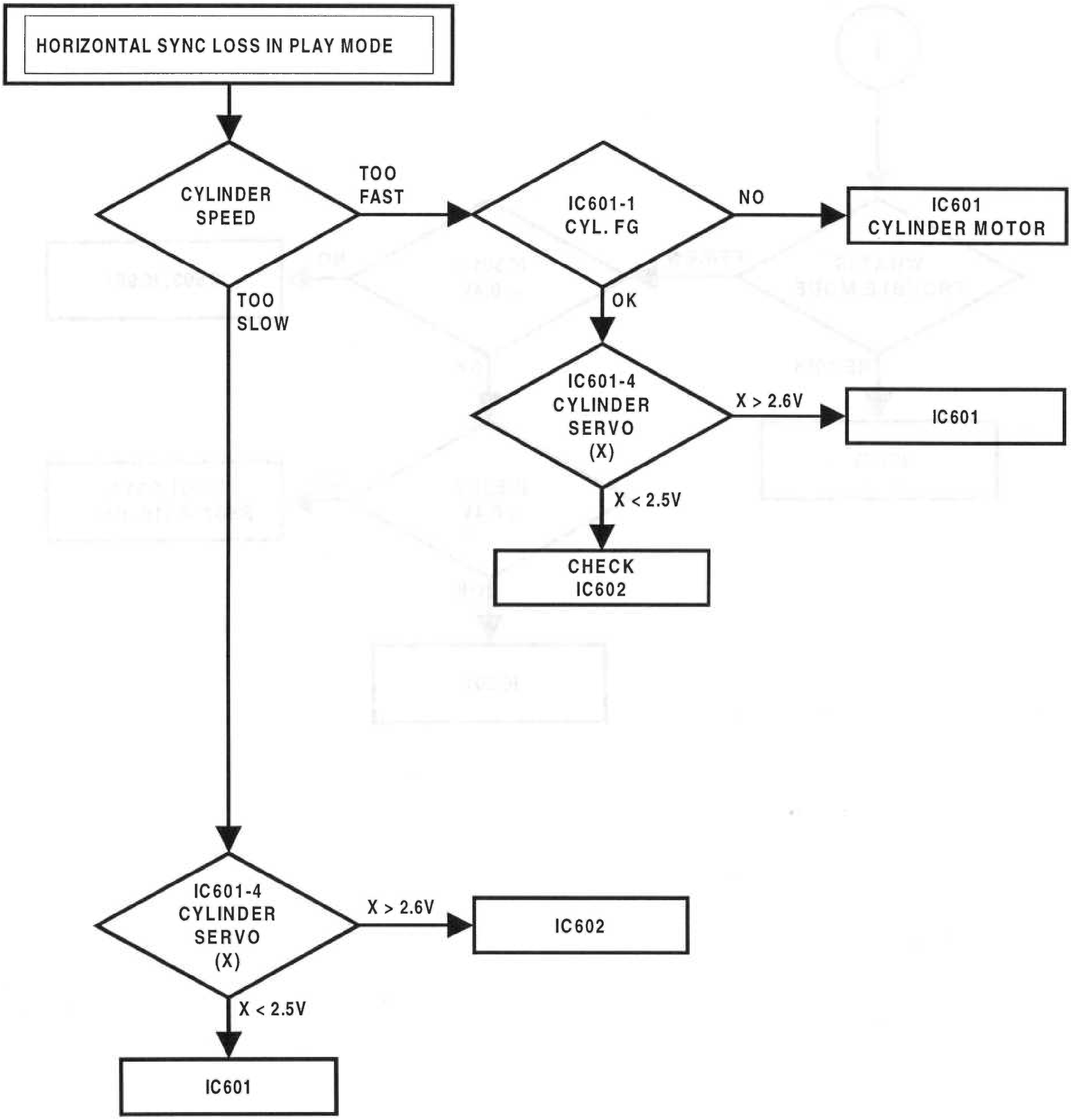

CYLINDER DOES NOT ROTATE
IC602-19, 25
5V
NO
5V LINE
OK
IC602-20
9V
NO
9V LINE
OK
PG601-6/8
HALL BIAS
NO
(0V)
R611, R613
CYL. MOTOR
OK
IC601-44
PULSE
NO
IC601, IC901
SERIAL DATA LINE
OK
IC602
CYL. MOTOR


CAPSTAN DOES NOT ROTATE
WHAT IS TROUBLE MODE
ALL MODES
FF/REC OR REC/PB
PG602-5 5V
NO
5V LINE
OK
PG602-8 0V ★
NO (5V)
IC901
OK
★ : THIS VOLTAGE WILL BE CHANGED FROM 5V TO 0V WHEN PLAY, REC, FF OR REW SW IS PRESSED
PG602-1 3.4V
OK
CAPSTAN MOTOR IC1M
NO
IC501-9 PULSE
NO
IC501, IC503, Q519, L502, R532, R506, R545
OK
IC501-1/2 VOLTAGE
2 < 1
IC501
2 > 1
C517, R507, R510, R511, IC901
1

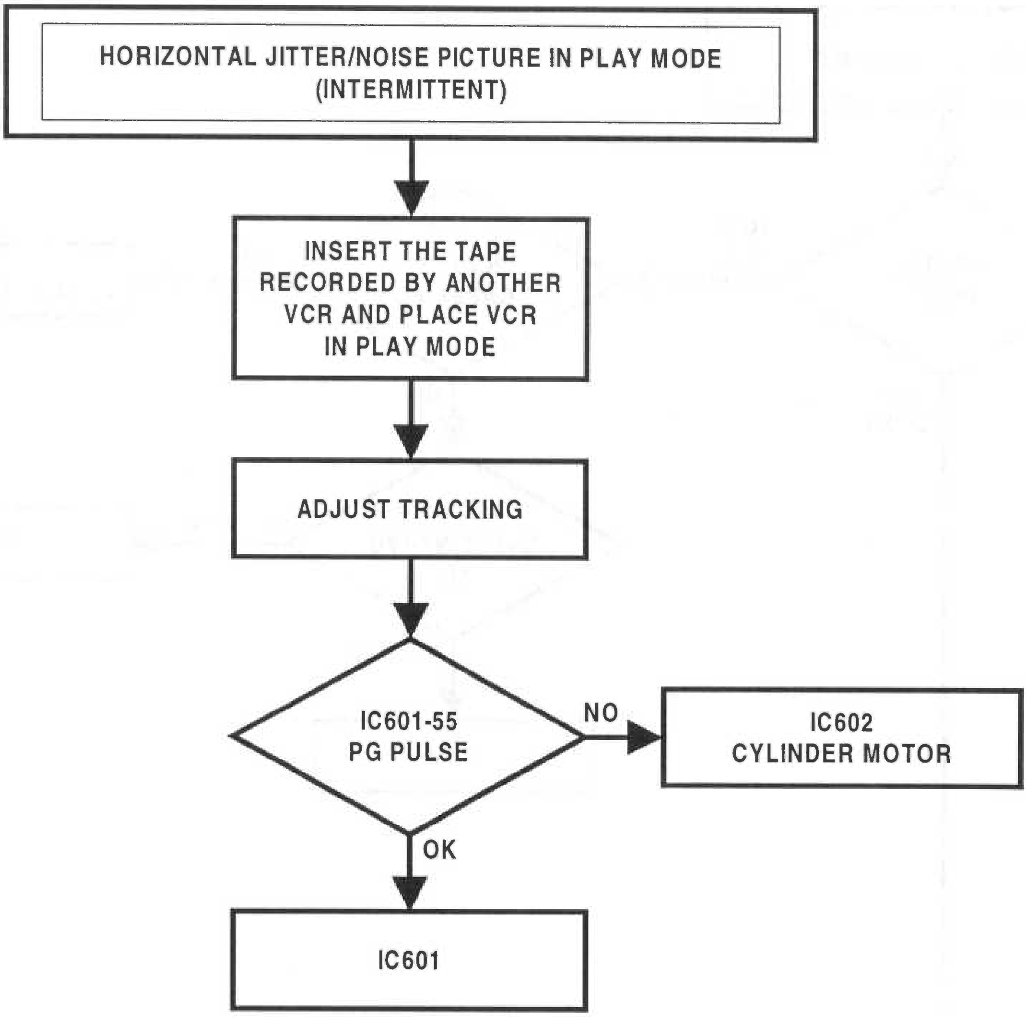
TROUBLESHOOTING GUIDES (Continued)


1
WHAT IS TROUBLE MODE
FF/REW
REC/PB
IC601
IC501-1 < 0.4V
NO
IC503, IC901
OK
IC501-2 < 0.4V
NO
IC901,C517, R507, R510, R511
OK
IC501

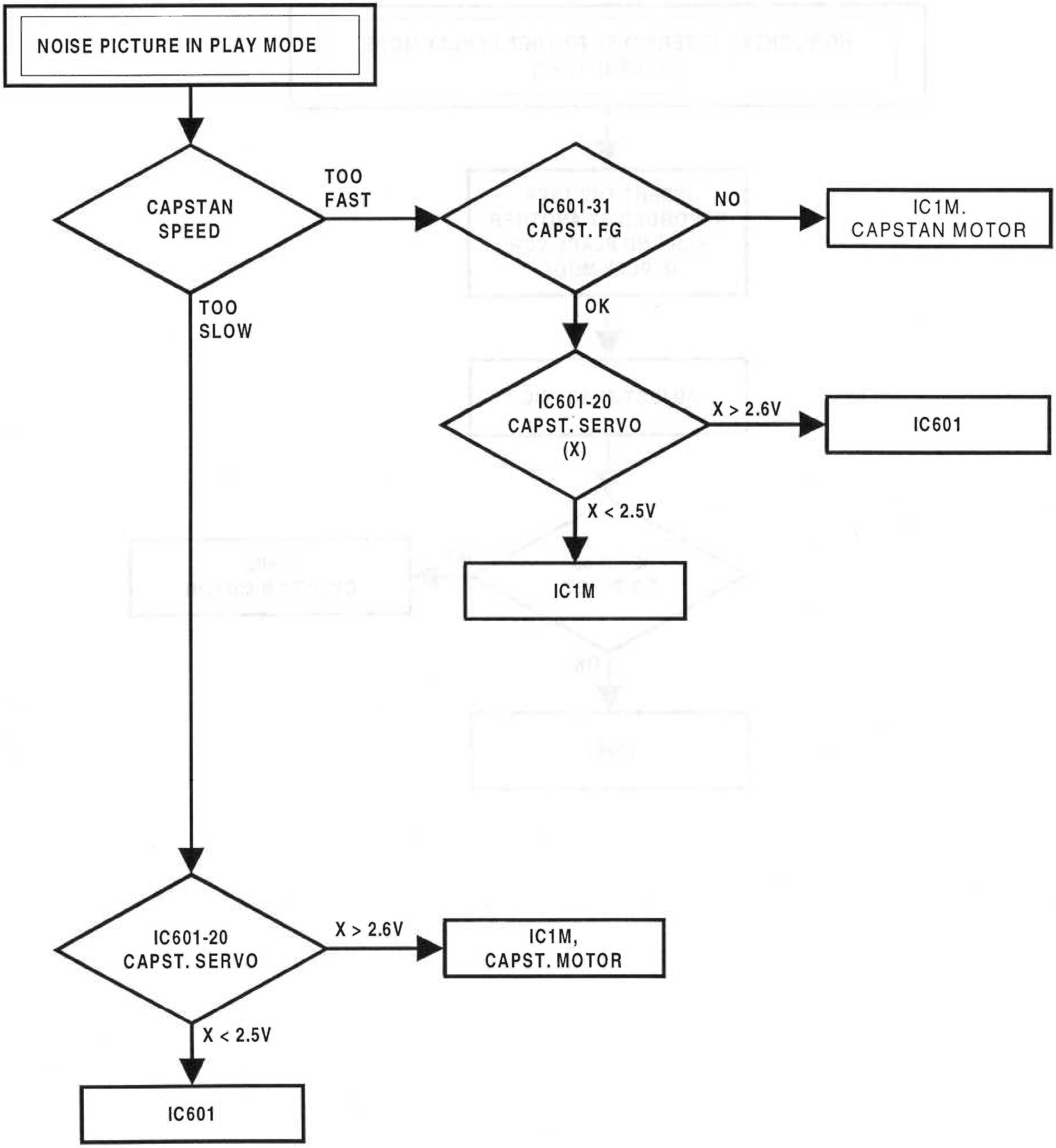
TROUBLESHOOTING GUIDES (Continued)


HORIZONTAL SYNC LOSS IN PLAY MODE
CYLINDER SPEED
TOO FAST
IC601-1 CYL. FG
NO
IC601 CYLINDER MOTOR
OK
IC601-4 CYLINDER SERVO (X)
X > 2.6V
IC601
X < 2.5V
CHECK IC602
TOO SLOW
IC601-4 CYLINDER SERVO (X)
X > 2.6V
IC602
X < 2.5V
IC601

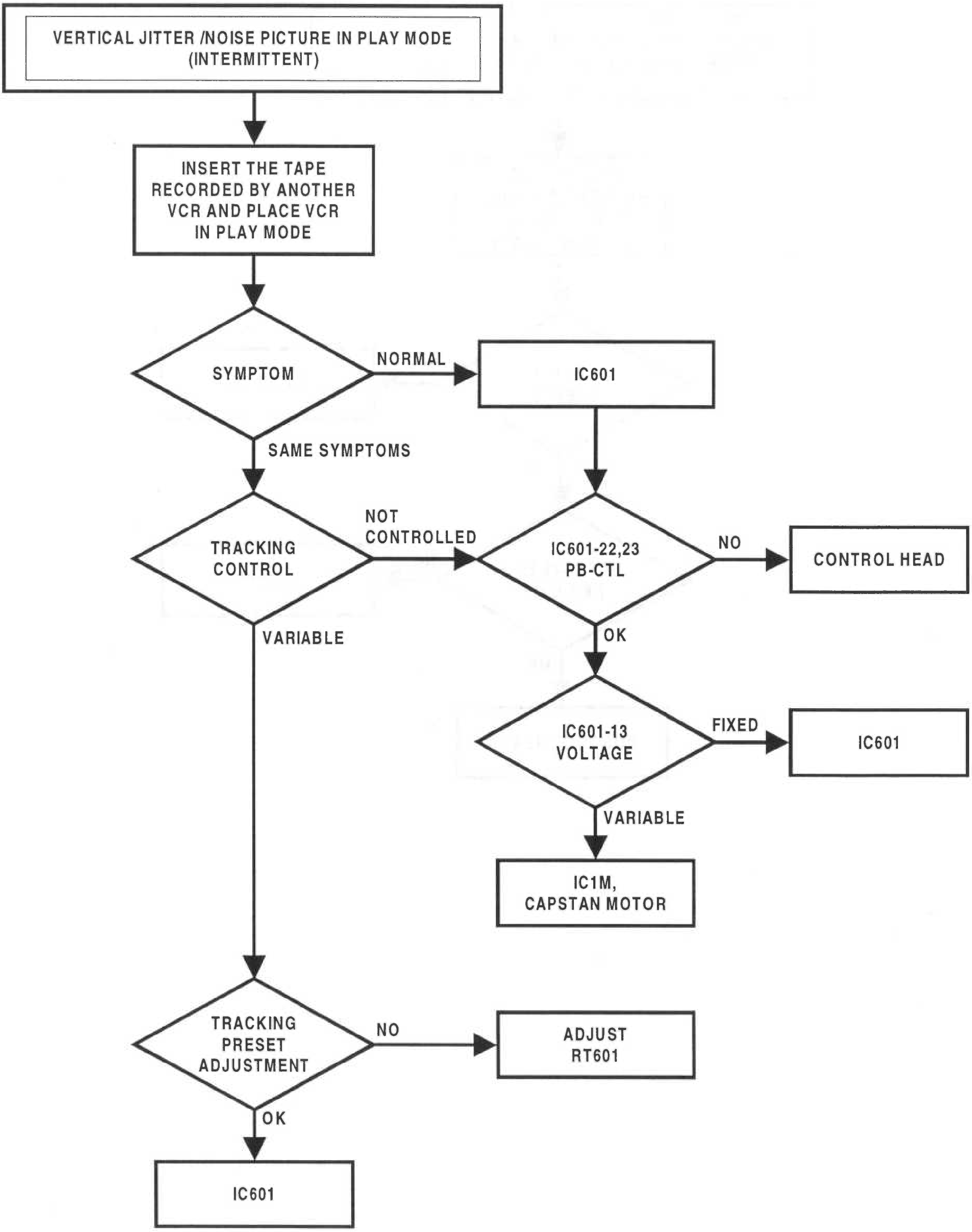
TROUBLESHOOTING GUIDES (Continued)

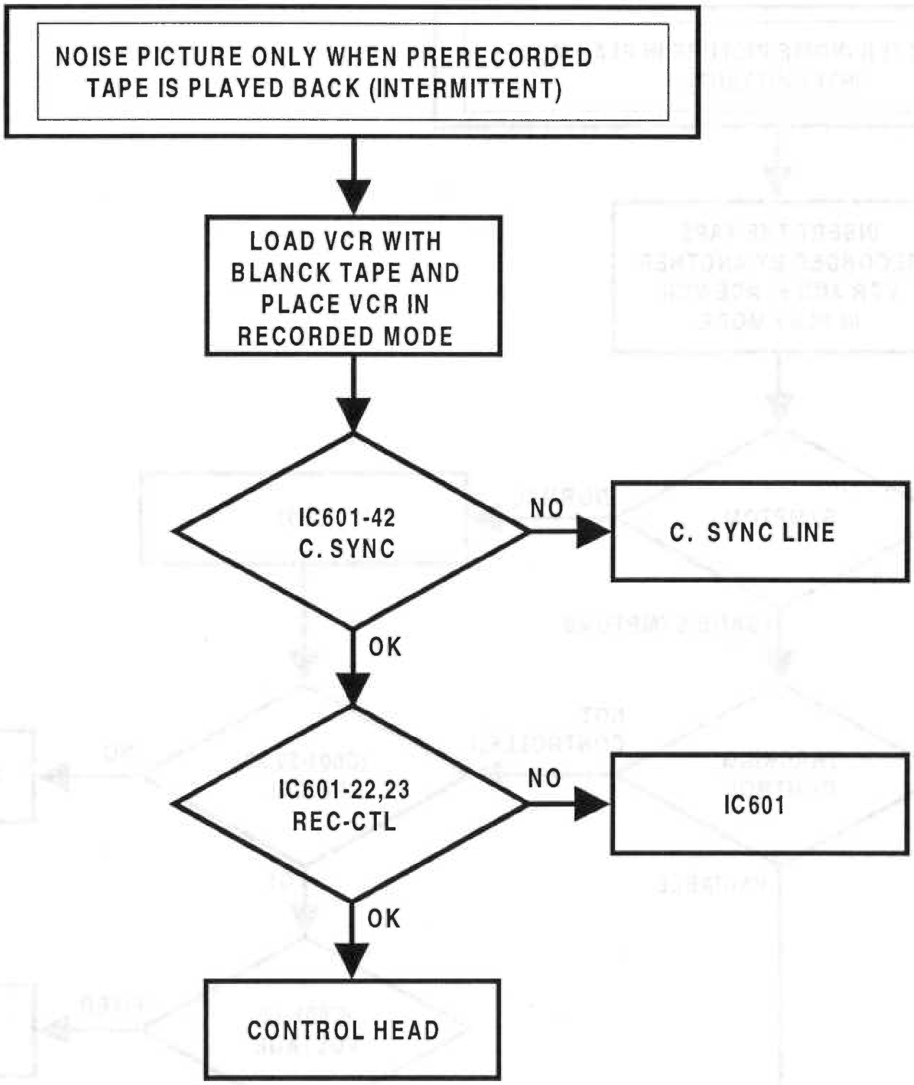

HORIZONTAL JITTER/NOISE PICTURE IN PLAY MODE (INTERMITTENT)
INSERT THE TAPE RECORDED BY ANOTHER VCR AND PLACE VCR IN PLAY MODE
ADJUST TRACKING
IC601-55 PG PULSE
NO
IC602 CYLINDER MOTOR
OK
IC601

TROUBLESHOOTING GUIDES (Continued)


NOISE PICTURE IN PLAY MODE
CAPSTAN SPEED
TOO FAST
TOO SLOW
IC601-31 CAPST. FG
NO
IC1M. CAPSTAN MOTOR
OK
IC601-20 CAPST. SERVO (X)
X > 2.6V
IC601
X < 2.5V
IC1M
IC601-20 CAPST. SERVO
X > 2.6V
IC1M, CAPST. MOTOR
X < 2.5V
IC601

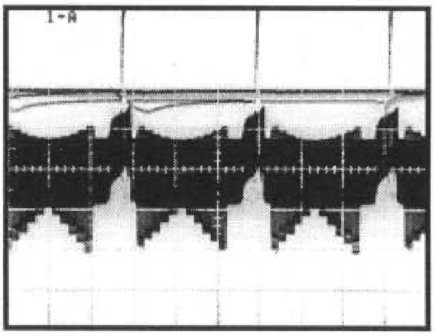
TROUBLESHOOTING GUIDES (Continued)


VERTICAL JITTER /NOISE PICTURE IN PLAY MODE (INTERMITTENT)
INSERT THE TAPE RECORDED BY ANOTHER VCR AND PLACE VCR IN PLAY MODE
SYMPTOM
NORMAL
IC601
SAME SYMPTOMS
TRACKING CONTROL
NOT CONTROLLED
IC601-22,23 PB-CTL
NO
CONTROL HEAD
OK
IC601-13 VOLTAGE
FIXED
IC601
VARIABLE
IC1M, CAPSTAN MOTOR
VARIABLE
TRACKING PRESET ADJUSTMENT
NO
ADJUST RT601
OK
IC601

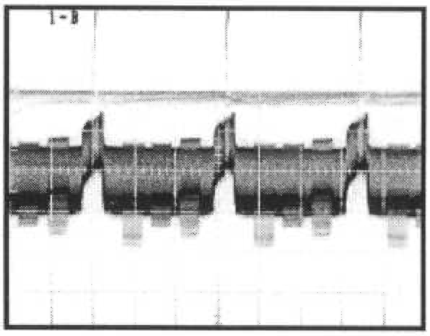

NOISE PICTURE ONLY WHEN PRERECORDED TAPE IS PLAYED BACK (INTERMITTENT)
LOAD VCR WITH BLANCK TAPE AND PLACE VCR IN RECORDED MODE
IC601-42 C. SYNC
NO
C. SYNC LINE
OK
IC601-22,23 REC-CTL
NO
IC601
OK
CONTROL HEAD

WAVEFORMS

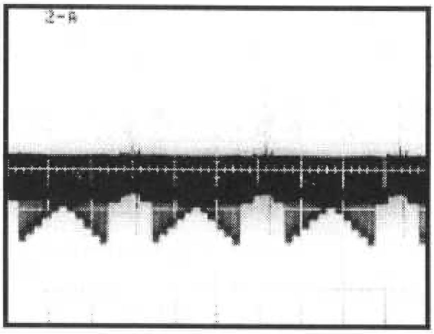
Sensor/Process



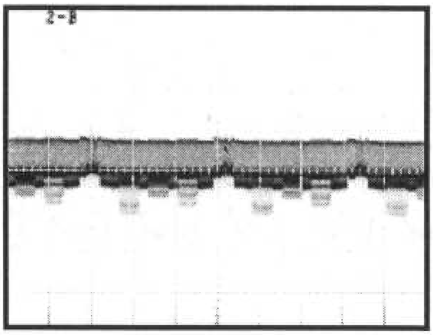
IC1001-4 700mVp-p
0.2V/20.0μ sec.cm



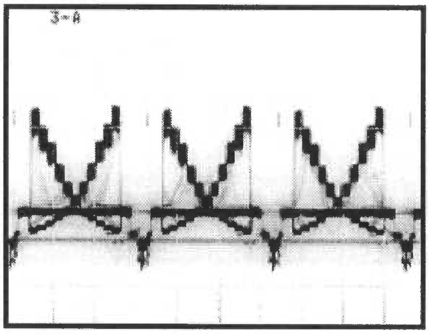
IC1001-4 700mVp-p
0.2V/20.0μ sec.cm
COLOR CHART



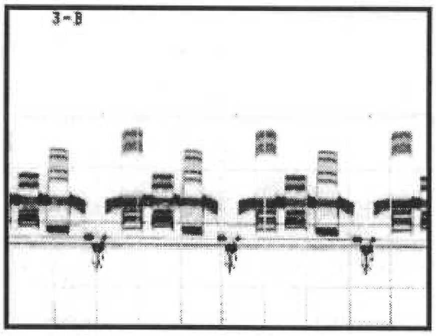
IC1101-3 550mVp-p
0.2V/20.0μ sec.cm



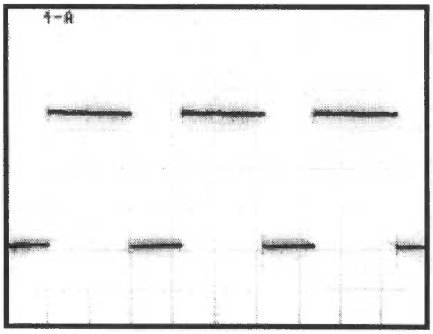
IC1101-3 400mVp-p
0.2V/20.0μ sec.cm
COLOR CHART



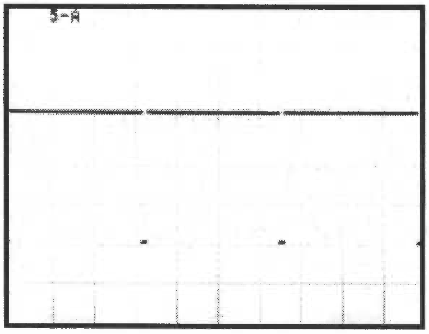
IC1102-31 1.8Vp-p
0.5V/20.0μ sec.cm



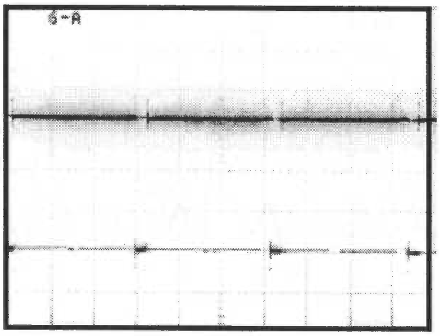
IC1102-31 1.6Vp-p
0.5V/20.0μ sec.cm
COLOR CHART



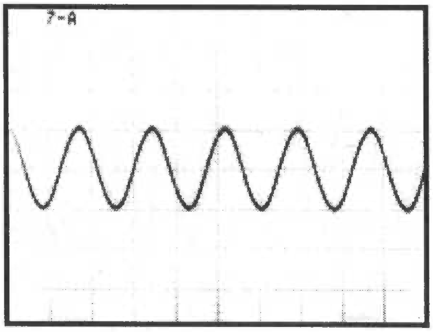
IC1103-9 3.5Vp-p
1V/20.0μ sec.cm



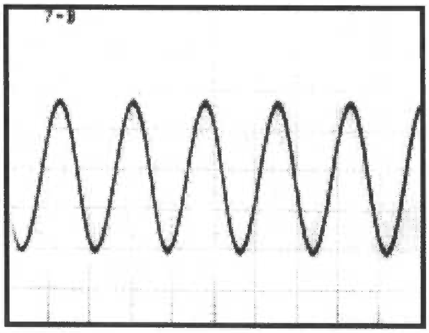
IC1103-16 3.4Vp-p
1V/5.0m sec.cm



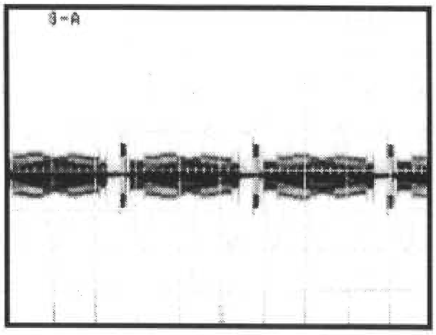
IC1103-19 3.4Vp-p
1V/20.0μ sec.cm



IC1103-27 1Vp-p
0.5V/20.0n sec.cm



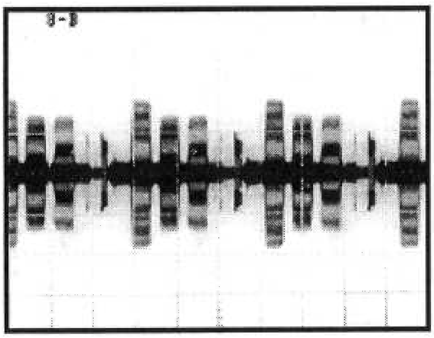
IC1103-27 1.8Vp-p
0.5V/20.0n sec.cm
COLOR CHART



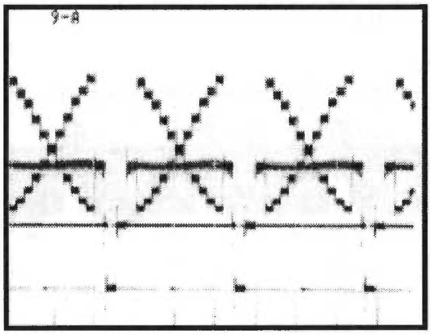
IC1103-42 340mVp-p
0.2V/20.0μ sec.cm

WAVEFORMS (Continued)

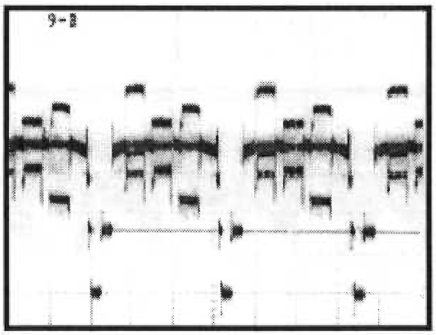
Sensor/Process



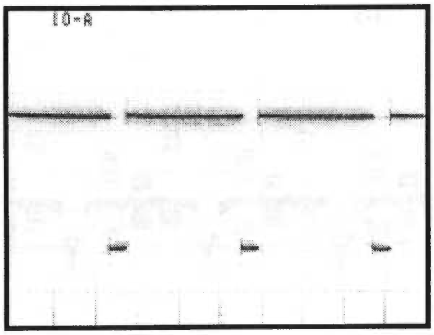
IC1103-42 730mVp-p
0.2V/20.0μ sec.cm
COLOR CHART



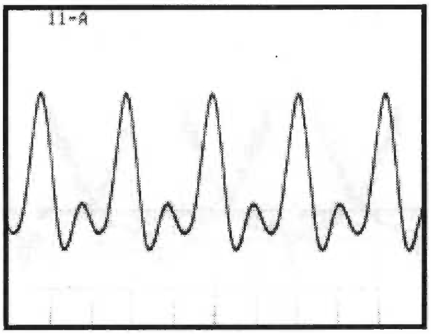
IC1103-46 1.0Vp-p
0.2V/20.0μ sec.cm



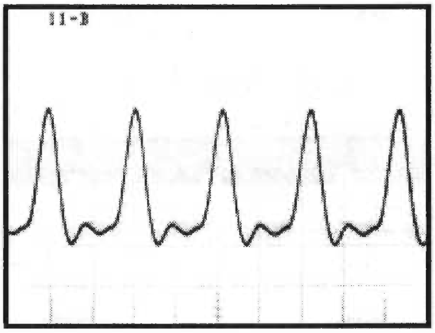
IC1103-46 1Vp-p
0.2V/20.0μ sec.cm
COLOR CHART



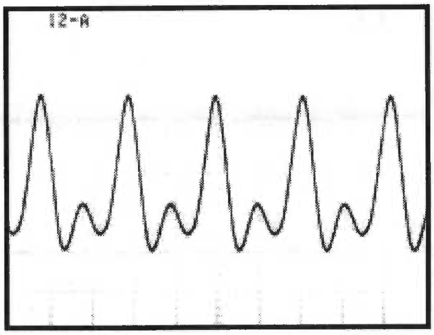
IC1103-90 3.4Vp-p
1V/20.0μ sec.cm



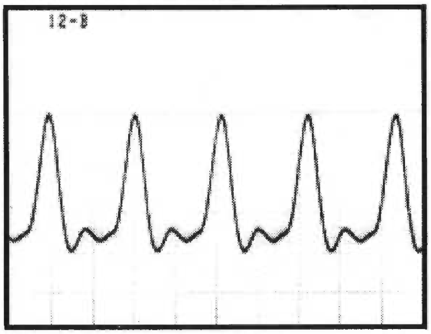
IC1103-106 4.0Vp-p
1V/50.0n sec.cm



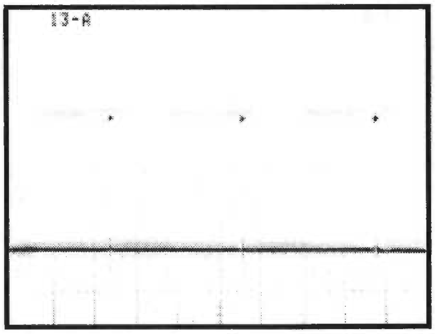
IC1103-106 3.5Vp-p
1V/50.0n sec.cm
COLOR CHART



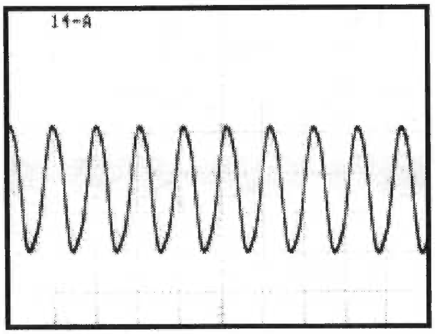
IC1103-1074.0Vp-p
1V/50.0n sec.cm



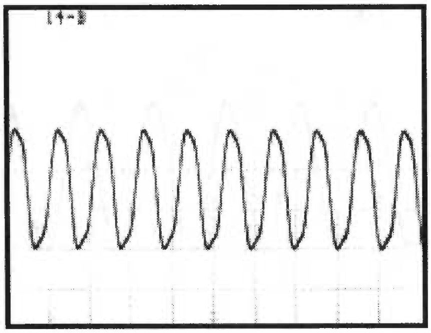
IC1103-107 3.5Vp-p
1V/50.0n sec.cm
COLOR CHART



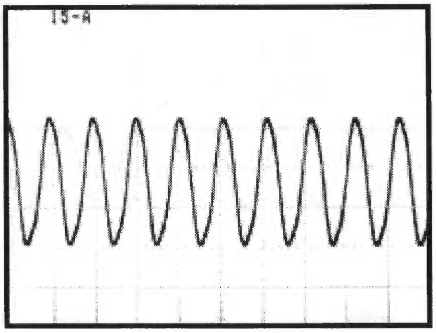
IC1103-108 3.4Vp-p
1V/20.0μ sec.cm



IC1103-110 6.5Vp-p
2V/100n sec.cm



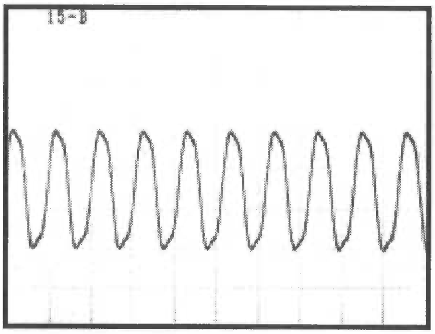
IC1103-1106.0Vp-p
2V/100n sec.cm
COLOR CHART



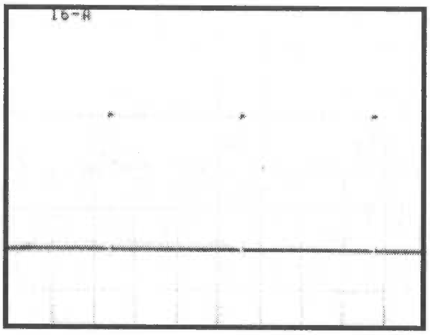
IC1103-111 6.5Vp-p
2V/100n sec.cm

WAVEFORMS (Continued)

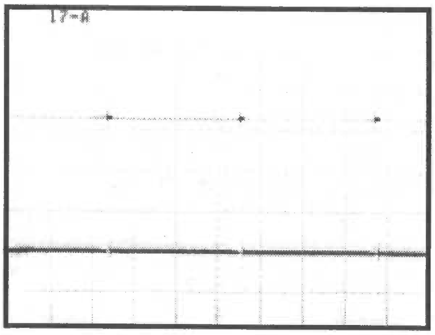
Sensor/Process



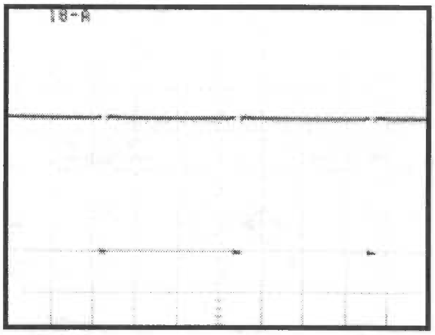
IC1103-111 6.0Vp-p
2V/100n sec.cm
COLOR CHART



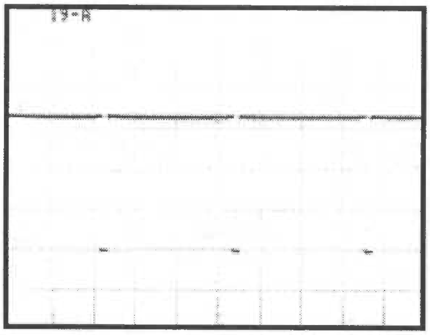
IC1103-115 3.4Vp-p
1V/20.0μ sec.cm



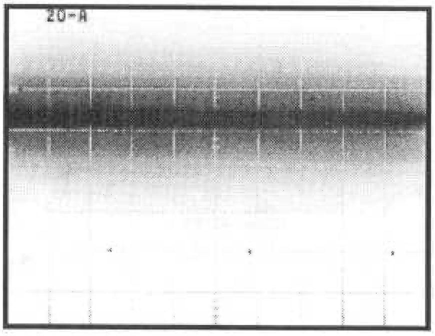
IC1103-116 3.4Vp-p
1V/20.0μ sec.cm



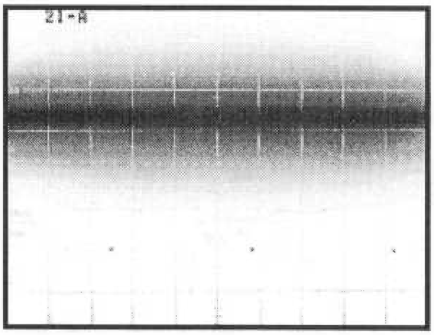
IC1103-117 3.4Vp-p
1V/20.0μ sec.cm



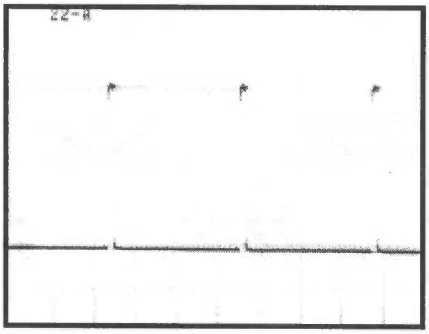
IC1103-118 3.4Vp-p
1V/20.0μ sec.cm



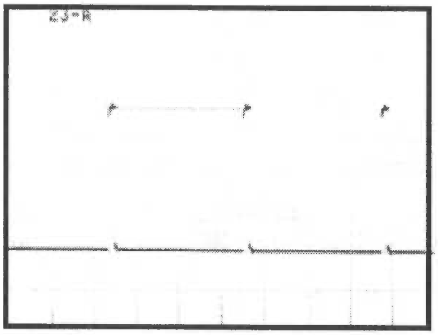
IC1103-119 3.4Vp-p
1V/5.0m sec.cm



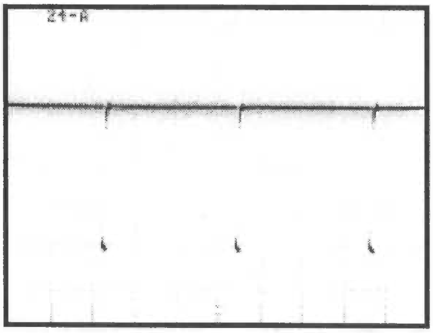
IC1103-120 3.4Vp-p
1V/5.0m sec.cm



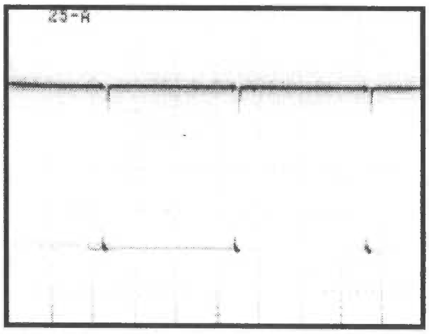
IC1104-3 8.0Vp-p
2V/20.0μ sec.cm



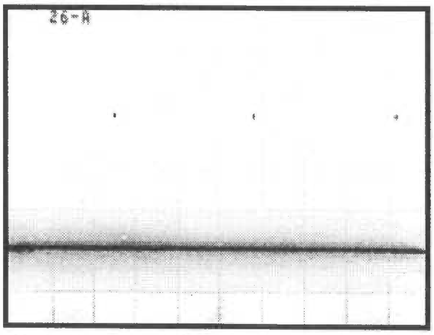
IC1104-5 7.0Vp-p
2V/20.0μ sec.cm



IC1104-17 7.0Vp-p
2V/20.0μ sec.cm



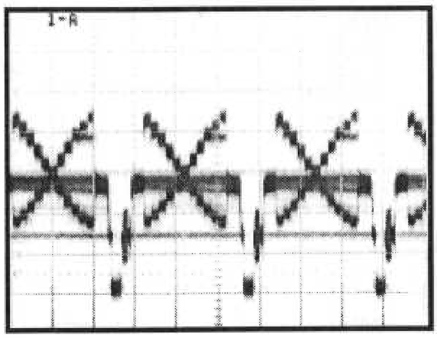
IC1104-18 8.0Vp-p
2V/20.0μ sec.cm



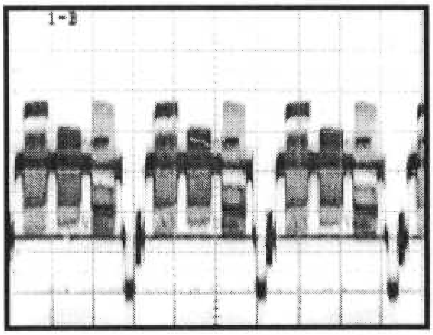
IC1106-27 3.4Vp-p
1V/5.0m sec.cm

WAVEFORMS (Continued)

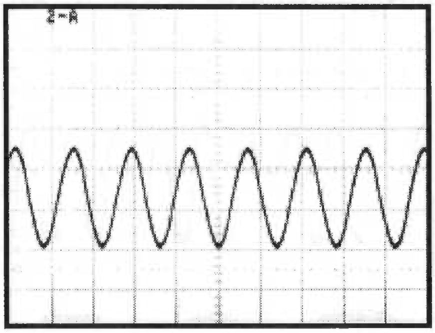
EVF



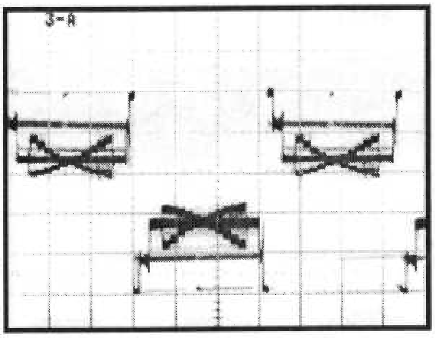
IC2101-3 450mVp-p
0.1V/20.0μ sec.cm



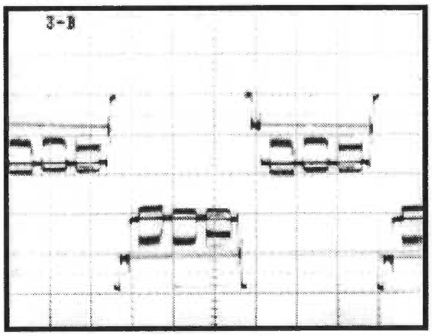
IC2101-3 470mVp-p
0.1V/20.0μ sec.cm
COLOR CHART



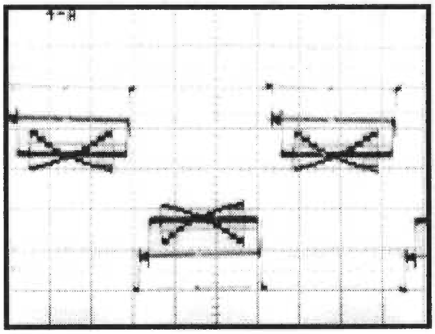
IC2101-14 500mVp-p
0.2V/200n sec.cm



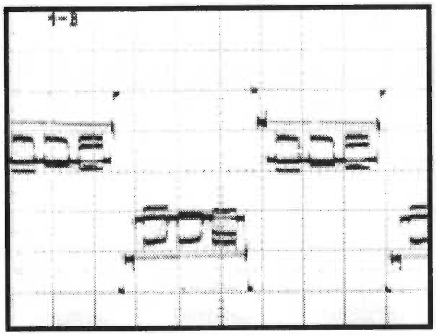
IC2101-20 10Vp-p
2V/20.0μ sec.cm



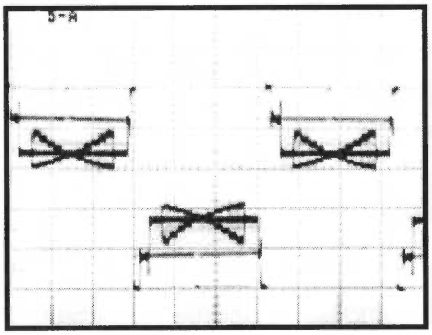
IC2101-20 10Vp-p
2V/20.0μ sec.cm
COLOR CHART



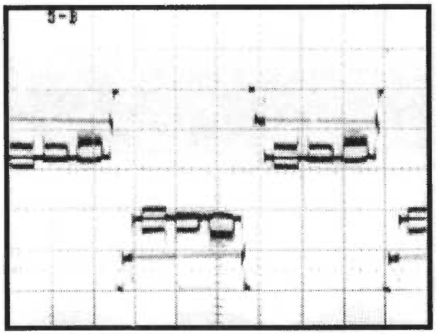
IC2101-22 10Vp-p
2V/20.0μ sec.cm



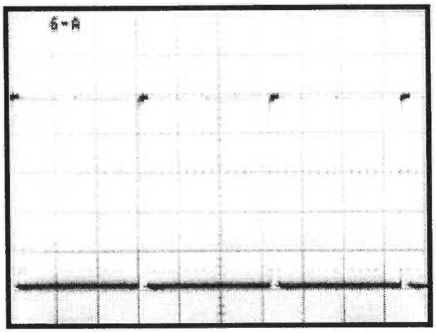
IC2101-22 10Vp-p
2V/20.0μ sec.cm
COLOR CHART



IC2101-24 10Vp-p
2V/20.0μ sec.cm

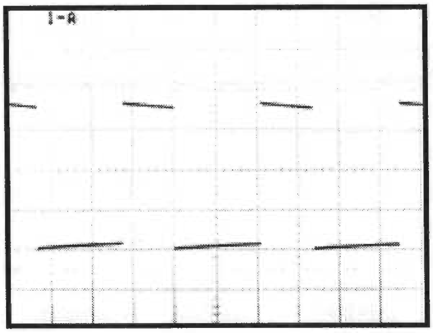


IC2101-24 10Vp-p
2V/20.0μ sec.cm
COLOR CHART

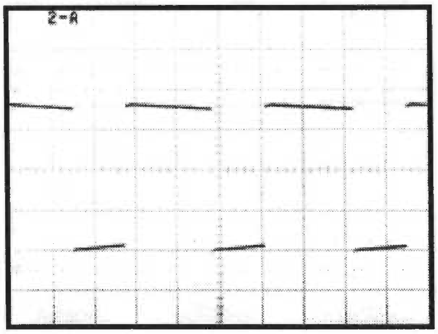


IC2101-37 5.0Vp-p
1V/20.0μ sec.cm

Servo



IC601-22 3.7Vp-p
1V/10.0m sec.cm
REC

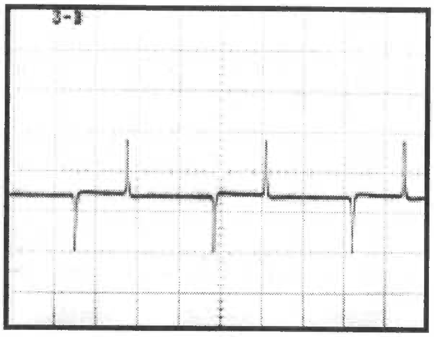


IC601-23 3.7Vp-p
1V/10.0m sec.cm
REC

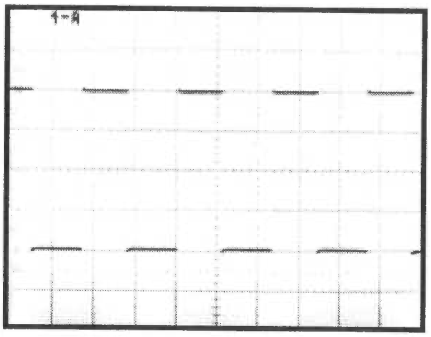
3-G5

WAVEFORMS (Continued)

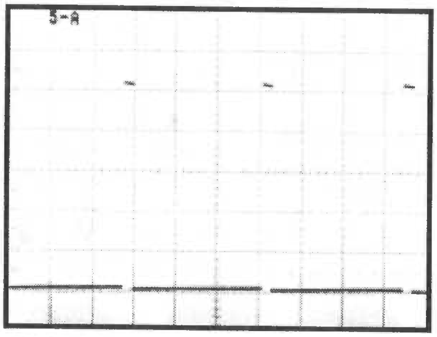
Servo



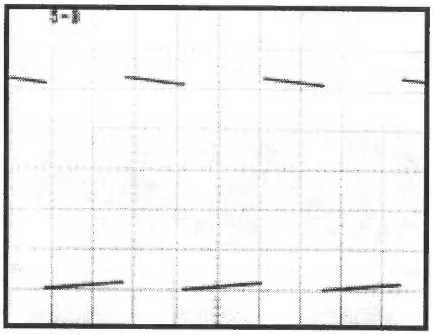
IC601-28 2.9Vp-p
1V/10.0m sec.cm
PLAY



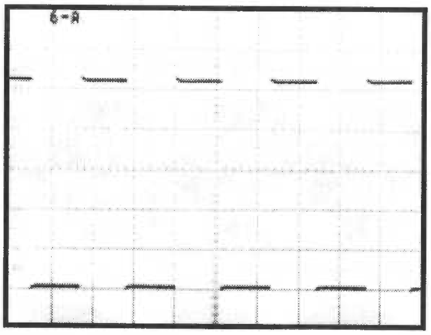
IC601-31 4.0Vp-p
1V/200µ sec.cm
REC/PLAY



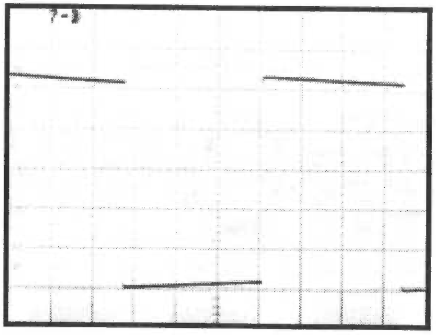
IC601-33 5.2Vp-p
1V/10.0m sec.cm
REC



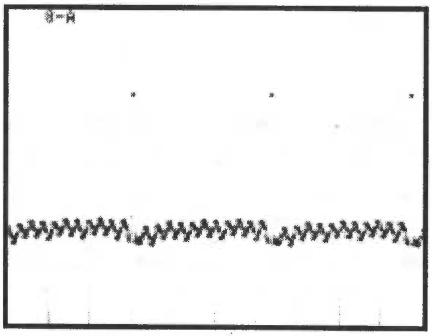
IC601-33 5.2Vp-p
1V/10.0m sec.cm
PLAY



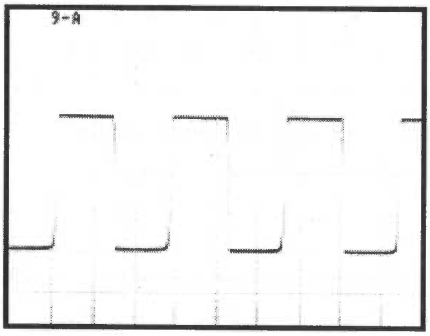
IC601-47 5.2Vp-p
1V/200µ sec.cm
REC/PLAY



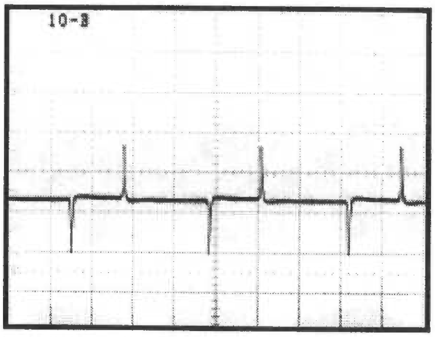
IC601-49 5.3Vp-p
1V/5.0m sec.cm
PLAY



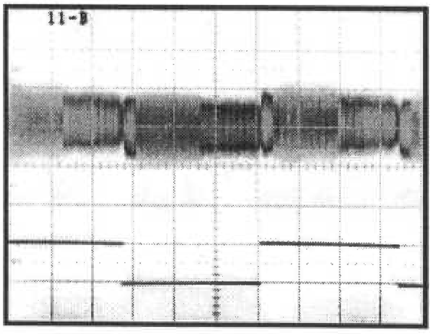
IC602-11 2.0Vp-p
0.5V/10.0m sec.cm
REC/PLAY



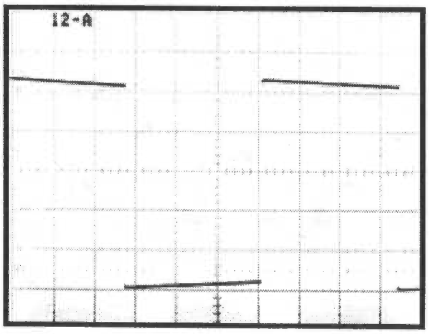
IC602-16 3.4Vp-p
1V/1.0m sec.cm
REC/PLAY



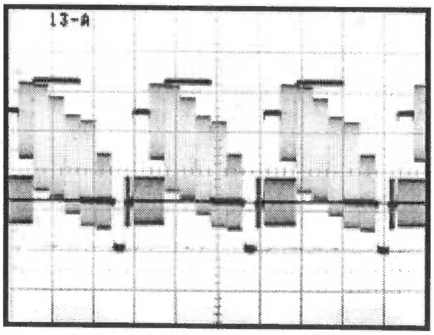
TP601 2.7Vp-p
1V/10.0m sec.cm
PLAY



PG603-1 200mVp-p
0.2V/5.0m sec.cm
PLAY



PG603-3 5.3Vp-p
1V/5.0m sec.cm
REC/PLAY

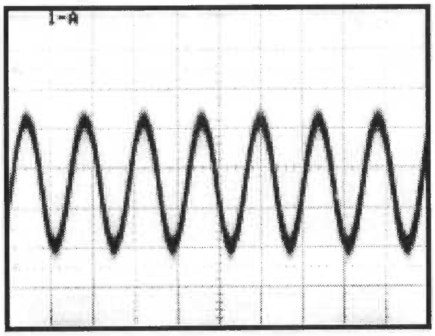


PG603-142.1Vp-p
0.5V/20.0µ sec.cm
REC/PLAY

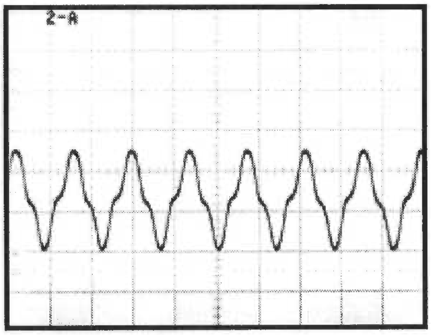
T.C. Corp
10 North Main St
Wharton NJ 07885
www.servicemanuals.net

WAVEFORMS (Continued)

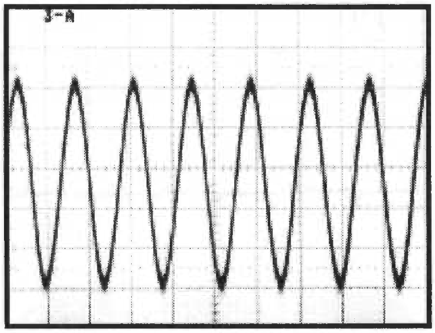
Luma/Chroma



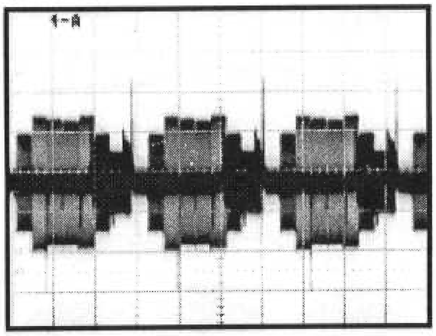
IC201-6 320mVp-p
0.1V/100n sec.cm
REC/PLAY



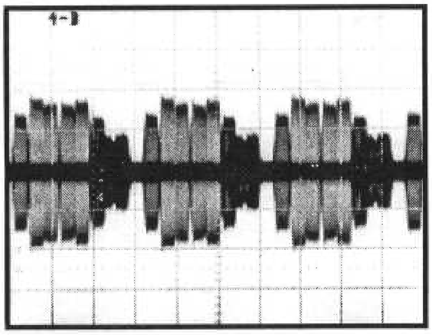
IC201-8 1.3Vp-p
0.5V/200n sec.cm
REC/PLAY



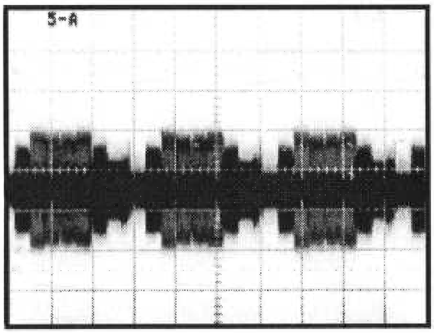
IC201-9 520mVp-p
0.1V/200n sec.cm
REC/PLAY



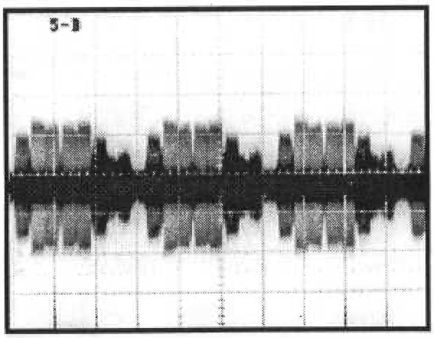
IC201-15 340mVp-p
0.1V/20.0μ sec.cm
REC



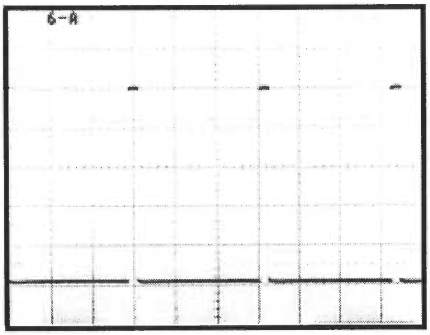
IC201-15 760mVp-p
0.2V/20.0μ sec.cm
PLAY



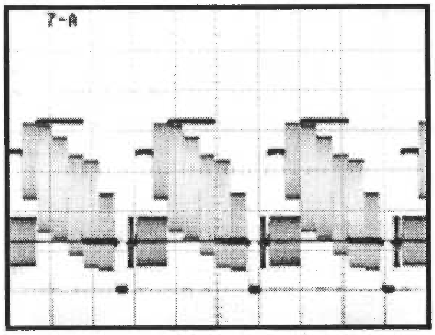
IC201-17 150mVp-p
50mV/20.0μ sec.cm
REC



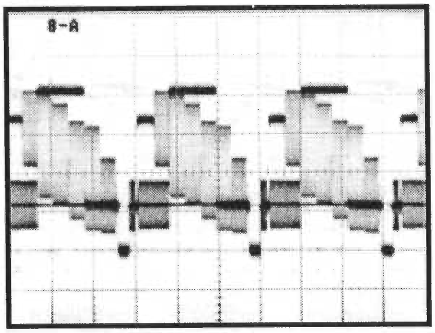
IC201-17 330mVp-p
0.1V/20.0μ sec.cm
PLAY



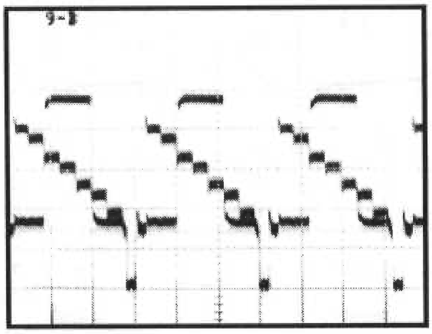
IC201-25 5.0Vp-p
1V/20.0μ sec.cm
REC/PLAY



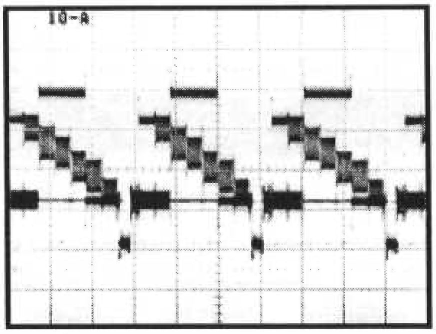
IC201-27 2.0Vp-p
0.5V/20.0μ sec.cm
REC/PLAY



IC201-37 950mVp-p
0.2V/20.0μ sec.cm
REC



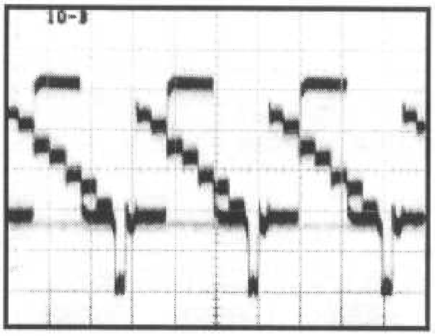
IC201-42 480mVp-p
0.1V/20.0μ sec.cm
PLAY



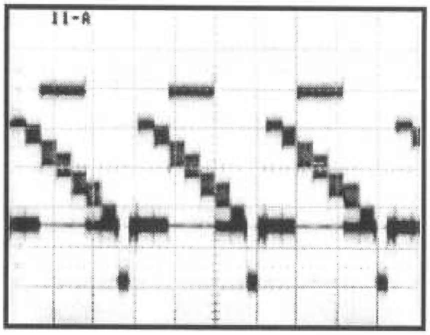
IC201-43 800mVp-p
0.2V/20.0μ sec.cm
REC

WAVEFORMS (Continued)

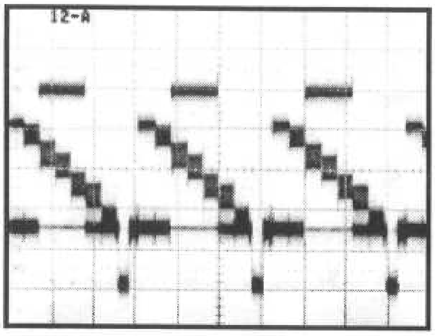
Luma/Chroma



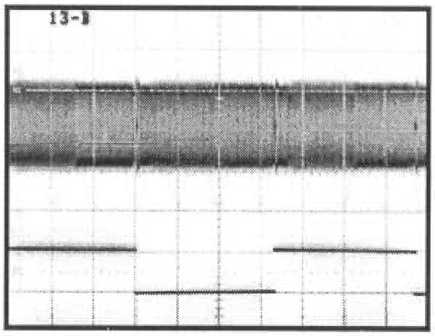
IC201-43 520mVp-p
0.1V/20.0μ sec.cm
PLAY



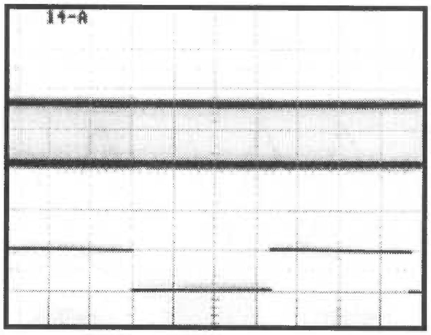
IC201-44 500mVp-p
0.1V/20.0μ sec.cm
REC/PLAY



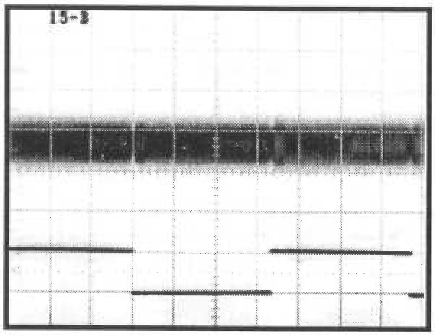
IC201-45 500mVp-p
0.1V/20.0μ sec.cm
REC/PLAY



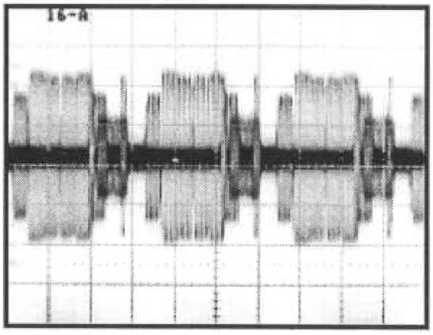
IC201-58 430mVp-p
0.2V/5.0m sec.cm
PLAY



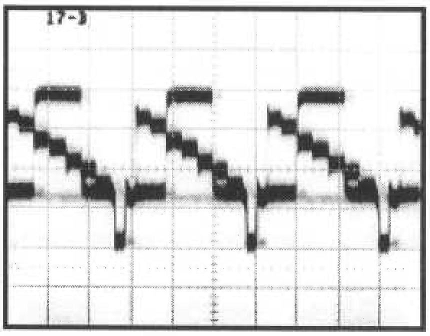
IC201-59 870mVp-p
0.5V/5.0m sec.cm
REC



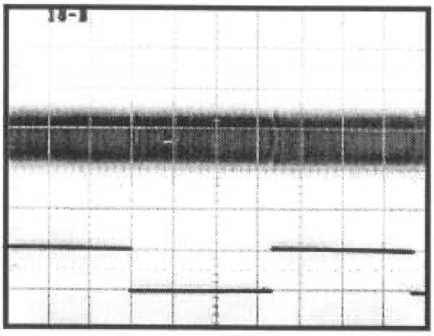
IC201-60 130mVp-p
0.1V/5.0m sec.cm
PLAY



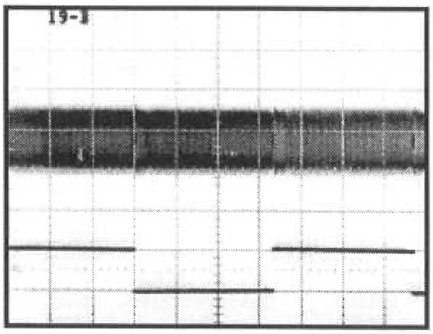
IC201-62 440mVp-p
0.1V/20.0μ sec.cm
REC



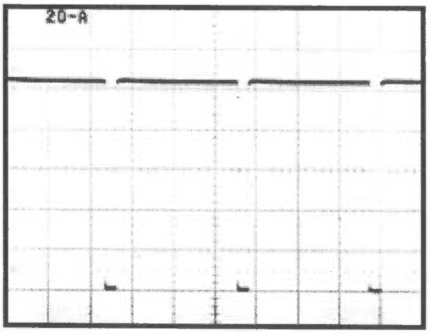
IC202-4 800mVp-p
0.2V/20.0μ sec.cm
PLAY



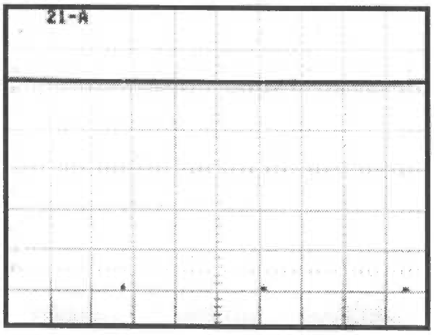
IC203-16 140mVp-p
0.1V/5.0m sec.cm
PLAY



IC203-22 310mVp-p
0.2V/5.0m sec.cm
PLAY



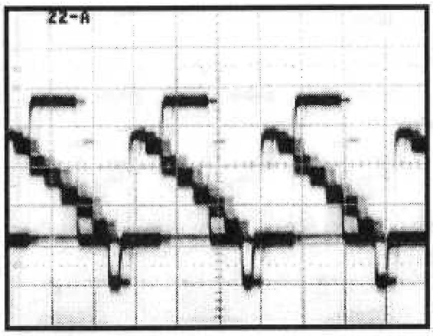
IC204-2 5.2Vp-p
1V/20.0μ sec.cm
REC/PLAY



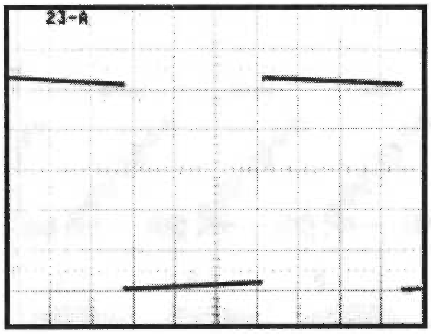
IC204-4 5.2Vp-p
1V/5.0m sec.cm
REC/PLAY

WAVEFORMS (Continued)

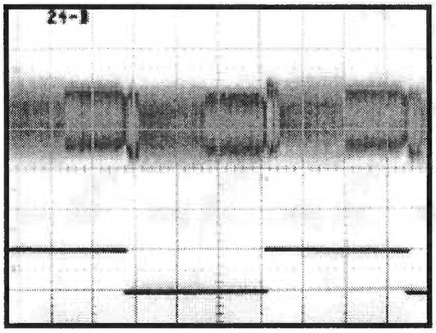
Luma/Chroma



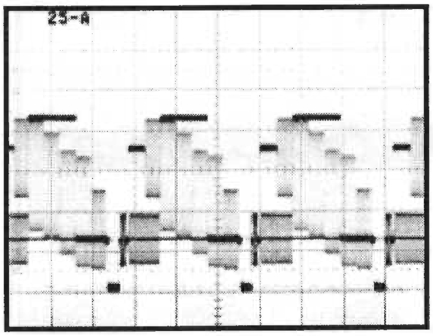
IC204-6 930mVp-p
0.2V/20.0µ sec.cm
REC/PLAY



TP201 5.3Vp-p
1V/5.0m sec.cm
REC/PLAY

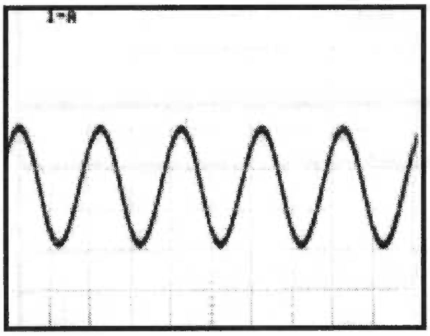


TP202 350mVp-p
0.2V/5.0m sec.cm
PLAY

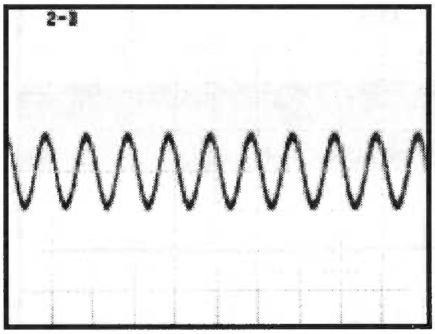


TP204 2.1Vp-p
0.5V/20.0µ sec.cm
REC/PLAY

Audio



IC401-3 1.5Vp-p
0.5V/500µ sec.cm
REC



IC401-8 1.0Vp-p
0.5V/1.0m sec.cm
PLAY

VOLTAGE CHARTS

System Control / Trouble Sensor

MODE / PIN NO.	STOP	REC	PLAY	REW/ F. FWD	REV/ FWD	REC PAUSE	PLAY PAUSE
IC901							
1	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0
5	1.4	1.4	1.4	1.4	1.4	1.4	1.4
6	0.8	0.8	0.8	0.8	0.8	0.8	0.8
7	0	0	0	0	0	0	0
8	2.3	2.3	2.3	2.3	2.3	2.3	2.3
9	2.3	2.3	2.3	2.3	2.3	2.3	2.3
10	5.0	5.0	5.0	5.0	5.0	5.0	5.0
11	4.5	4.5	4.5	4.5	4.5	4.5	4.5
12	0	2.6	2.6	0	2.6	2.6	2.6
13	5.1	5.1	5.1	5.1	5.1	5.1	5.1
14	5.2	5.2	5.2	5.2	5.2	5.2	5.2
15	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0
17	0	2.2	2.2	2.2	2.2	0	0
18	4.6	4.6	4.6	4.6	4.6	4.6	4.6
19	0	4.6	0	0	0	4.6	0
20	4.5	0	4.5	4.5	4.5	0	4.5
21	4.5	4.5	4.5	4.5	4.5	4.5	4.5
22	0	5.1/0	0	0	0	5.1/0	0
23	0	4.9	0	0	0	0	0
24	0	4.9	0	0	0	0	0
25	0.3	4.9	4.9	0.3	0.3	0.3	4.9
26	0	0	0	0	0	0	0
27	0.2	4.9	0.2	0.2	0.2	0.2	0.2
28	5.0	5.0	5.0	5.0	5.0	5.0	5.0
29	5.0	5.0	5.0	5.0	5.0	5.0	5.0
30	5.0	5.0	5.0	5.0	5.0	5.0	5.0
31	5.0	5.0	5.0	5.0	5.0	5.0	5.0
32	5.0	5.0	5.0	5.0	5.0	5.0	5.0
33	5.0	5.0	5.0	5.0	5.0	5.0	5.0
34	5.0	5.0	5.0	5.0	5.0	5.0	5.0
35	5.0	5.0	5.0	5.0	5.0	5.0	5.0
36	5.0	5.0	5.0	5.0	5.0	5.0	5.0
37	0	0	0	0	0	0	0
38	0	0	0	0	0	0	0
39	0.2/4.7	0.2/4.7	0.2/4.7	0.2/4.7	0.2/4.7	0.2/4.7	0.2/4.7
40	0.2/4.7	0.2/4.7	0.2/4.7	0.2/4.7	0.2/4.7	0.2/4.7	0.2/4.7
41	0	0	0	0	0	0	0
42	0	5.2	5.2	0	0/5.2	5.2	5.2
43	0	0	0	5.2	0	0	0
44	5.2	0	0	0	0	0	0
45	0	0	0	0	0	0	0
46	0	0	0	0	0	0	0
47	5.1	5.1	5.1	5.1	5.1	5.1	5.1
48	0	0	0	0	0	5.0	0
49	0	0	0	0	0	0	0
50	0	0	0	0	0	0	0
51	5.0	5.0	5.0	5.0	5.0	5.0	5.0
52	5.0	5.0	5.0	5.0	5.0	5.0	5.0
53	5.0	5.0	5.0	5.0	5.0	5.0	5.0
54	5.0	5.0	5.0	5.0	5.0	5.0	5.0
55	5.0	5.0	5.0	5.0	5.0	5.0	5.0
56	5.0	5.0	0.1	5.0	0.1	5.0	5.0
57	0	0	5.0	0	5.0	0	0
58	5.0	0.1	5.0	5.0	5.0	0.1	5.0
59	2.4	2.4	2.4	2.4	2.4	2.4	2.4
60	0.6	0.6	0.6	1.9	0.6	0.6	0.6
61	0	0	0	0	0	0	0
62	0	0	0	5.0/0	5.0/0	0	0
63	5.0	0	0	0	0	5.0	5.0
64	0	0	0	0	0	0	0
65	5.2	5.2	5.2	5.2	5.2	5.2	5.2
66	5.2	5.2	5.2	5.2	5.2	5.2	5.2
67	1.7	0.9	0.9	1.7	0.9	0.9	0.9
68	4.8	4.8	4.8	4.8	4.8	4.8	4.8
69	0	0	0	0	0	0	0
70	3.9	3.9	3.9	3.9	3.9	3.9	3.9
71	4.3	4.3	4.3	4.3	4.3	4.3	4.3
72	0	0	0	0	0	0	0
73	0	0	0	0	0	0	0
74	5.2	5.2	5.2	5.2	5.2	5.2	5.2
75	5.2	5.2	5.2	5.2	5.2	5.2	5.2
76	5.2	5.2	5.2	5.2	5.2	5.2	5.2
77	3.8	3.8	3.8	3.8	3.8	3.8	3.8
78	5.2	5.2	5.2	5.2	5.2	5.2	5.2
79	5.2	5.2	5.2	5.2	5.2	5.2	5.2
80	0	0	0	0	0	0	0
IC902							
1	5.0	5.0	5.0	5.0	5.0	5.0	5.0
2	0	0	0	0	0	0	0
3	5.1	5.1	5.1	5.1	5.1	5.1	5.1
4	3.2	3.2	3.2	3.2	3.2	3.2	3.2
5	4.8	4.8	4.8	4.8	4.8	4.8	4.8
6	0	0	0	0	0	0	0
7	5.1	5.1	5.1	5.1	5.1	5.1	5.1
8	9.5	9.5	9.5	9.5	9.5	9.5	9.5

Continued >

VOLTAGE CHARTS (Continued)

System Control / Trouble Sensor

MODE / PIN NO.	STOP	REC	PLAY	REW/ F. FWD	REV/ FWD	REC PAUSE	PLAY PAUSE
IC903							
1	0	0	0	0	0	0	0
2	4.8	4.8	4.8	4.8	4.8	4.8	4.8
3	0	0	0	0	0	0	0
4	4.2	4.2	4.2	4.2	4.2	4.2	4.2
5	5.2	5.2	5.2	5.2	5.2	5.2	5.2
6	5.2	5.2	5.2	5.2	5.2	5.2	5.2
7	2.1	2.1	2.1	2.1	2.1	2.1	2.1
8	2.7	2.7	2.7	2.7	2.7	2.7	2.7
9	2.7	2.7	2.7	2.7	2.7	2.7	2.7
10	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0
18	5.1	5.1	5.1	5.1	5.1	5.1	5.1
19	4.8	4.8	4.8	4.8	4.8	4.8	4.8
20	5.2	5.2	5.2	5.2	5.2	5.2	5.2
IC904							
1	0	0	0	0	0	0	0
2	9.6	9.5	9.5	9.6	9.5	9.5	9.5
3	9.6	9.5	9.5	9.6	9.5	9.5	9.5
4	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0
6	6.8	6.8	6.8	6.8	6.8	6.8	6.8
7	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0
IC905							
1	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0
4	4.9	4.9	4.9	4.9	4.9	4.9	4.9
5	5.2	5.2	5.2	5.2	5.2	5.2	5.2
IC906							
1	0	0	0	0	0	0	0
2	2.8	2.8	2.8	2.8	2.8	2.8	2.8
3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
4	2.6	2.6	2.7	3.1	2.2	2.6	2.7
5	0	0	0	0	0	0	0
6	3.3	3.2	3.3	3.3	3.3	3.2	3.3
7	0	0	0	0	0	0	0
8	5.2	5.2	5.2	5.2	5.2	5.2	5.2

System Control / Trouble Sensor

MODE / PIN NO.	STOP	REC	PLAY	REW/ F. FWD	REV/ FWD	REC PAUSE	PLAY PAUSE
9	0	0.2	0	0	0	0.2	0
10	2.9	2.8	2.9	2.9	2.7	2.8	2.9
11	5.2	5.2	5.2	5.2	5.2	5.2	5.2
12	3.3	3.2	3.3	3.3	3.3	3.2	3.3
13	2.9	2.8	2.9	2.9	2.7	2.8	2.9
14	5.2	5.2	5.2	5.2	5.2	5.2	5.2
Q901							
1	5.1	5.1	5.1	5.1	5.1	5.1	5.1
2	3.8	3.8	3.8	3.8	3.8	3.8	3.8
3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
4	3.8	3.8	3.8	3.8	3.8	3.8	3.8
5	3.8	3.8	3.8	3.8	3.8	3.8	3.8
6	3.3	3.3	3.3	3.3	3.3	3.3	3.3
Q902							
1	4.9	4.9	4.9	4.9	4.9	4.9	4.9
2	5.0	5.0	5.0	5.0	5.0	5.0	5.0
3	0	0	0	0	0	0	0
4	4.8	4.8	4.8	4.8	4.8	4.8	4.8
5	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0
Q903							
E	0	0	0	0	0	0	0
C	4.1	4.1	4.1	4.1	4.1	4.1	4.1
B	0	0	0	0	0	0	0
Q904							
E	0	0	0	0	0	0	0
C	4.1	4.1	4.1	4.1	4.1	4.1	4.1
B	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Q905							
E	0.6	0.6	0.6	0.6	0.6	0.6	0.6
C	9.6	9.6	9.6	9.6	9.6	9.6	9.6
B	0.6	0.6	0.6	0.6	0.6	0.6	0.6

VOLTAGE CHARTS (Continued)

Switching Regulator

MODE / PIN NO.	STOP	REC	PLAY	REW/ F. FWD	REV/ FWD	REC PAUSE	PLAY PAUSE
IC501							
1	0	0.3	0.3	0.4	0.4	0.1	0.1
2	0	0.3	0.3	0.4	0.4	0	0
3	2.4	1.9	1.9	1.8	1.8	2.4	2.4
4	9.3	9.8	9.8	9.2	9.2	9.3	9.3
5	10.0	5.4	5.4	3.8	3.8	9.9	9.9
6	9.1	8.9	8.9	8.9	8.9	9.0	9.0
7	3.2	2.9	2.9	3.0	3.0	0.1	0.1
8	0	0.2	0.2	0.3	0.3	0	0
9	0.1	9.4	9.4	9.1	9.1	1.1	1.1
10	0	0	0	0	0	0	0
11	9.1	9.0	9.0	9.0	9.0	9.1	9.1
12	0.3	0.4	0.4	0.4	0.4	0.4	0.4
13	0	0	0	0	0	0	0
14	9.9	9.8	9.8	9.8	9.8	9.8	9.8
15	0.1	0.4	0.4	0.4	0.4	0.4	0.4
16	0.4	0.4	0.4	0.4	0.4	0.4	0.4
17	1.1	1.1	1.1	1.1	1.1	1.1	1.1
18	0.3	0.3	0.3	0.3	0.3	0.3	0.3
19	1.7	1.7	1.7	1.7	1.7	1.7	1.7
20	1.9	1.9	1.9	1.9	1.9	1.9	1.9
21	1.3	1.3	1.3	1.3	1.3	1.3	1.3
22	1.3	1.3	1.3	1.3	1.3	1.3	1.3
23	9.9	9.6	9.6	9.6	9.6	9.6	9.6
24	0	0	0	0	0	0	0
25	9.9	9.7	9.7	9.7	9.7	9.7	9.7
26	2.5	2.5	2.5	2.5	2.5	2.5	2.5
27	1.7	1.7	1.7	1.7	1.7	1.7	1.7
28	0.9	0.9	0.9	0.9	0.9	0.9	0.9
29	0.1	0.1	0.1	0.1	0.1	0.1	0.1
30	1.3	1.3	1.3	1.3	1.3	1.3	1.3
31	0	1.3	1.3	1.3	1.3	1.3	1.3
32	1.8	1.8	1.8	1.8	1.8	1.8	1.8
IC503							
1	9.9	9.9	9.9	9.9	9.9	9.9	9.9
2	0.3	3.0	3.0	4.8	4.8	0.3	0.3
3	9.8	9.6	9.6	9.6	9.6	9.8	9.8
4	0	0	0	0	0	0	0
Q501							
E	9.9	9.9	9.9	9.9	9.9	9.9	9.9
C	5.4	5.4	5.4	5.4	5.4	5.4	5.4
B	9.4	9.4	9.4	9.4	9.4	9.4	9.4
Q503							
1	-	-	-	-	-	-	-
2	9.8	9.8	9.8	9.8	9.8	9.8	9.8

Switching Regulator

MODE / PIN NO.	STOP	REC	PLAY	REW/ F. FWD	REV/ FWD	REC PAUSE	PLAY PAUSE
3	9.9	9.9	9.9	9.9	9.9	9.9	9.9
4	5.1	5.1	5.1	5.1	5.1	5.1	5.1
5	0	0	0	0	0	0	0
Q506							
E	0	0	0	0	0	0	0
C	9.9	9.9	9.9	9.9	9.9	9.9	9.9
B	0	0	0	0	0	0	0
Q507							
E	9.9	9.9	9.9	9.9	9.9	9.9	9.9
C	0	0	0	0	0	0	0
B	9.9	9.9	9.9	9.9	9.9	9.9	9.9
Q508							
E	9.0	8.9	8.9	8.9	8.9	8.9	8.9
C	9.9	9.8	9.8	9.8	9.8	9.8	9.8
B	9.6	9.6	9.6	9.6	9.6	9.6	9.6
Q512							
E	7.4	7.2	7.2	7.2	7.2	7.2	7.2
C	9.9	9.9	9.9	9.9	9.9	9.9	9.9
B	7.7	7.7	7.7	7.7	7.7	7.7	7.2
Q514							
E	3.4	3.4	3.4	3.4	3.4	3.4	3.4
C	5.2	5.2	5.2	5.2	5.2	5.2	5.2
B	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Q515							
E	0	0	0	0	0	0	0
C	9.9	9.8	9.8	9.8	9.8	9.8	9.8
B	0.3	0.4	0.4	0.4	0.4	0.4	0.4
Q516							
E	15.0	15.0	15.0	15.0	15.0	15.0	15.0
C	16.5	16.5	16.5	16.5	16.5	16.5	16.5
B	15.7	15.7	15.7	15.7	15.7	15.7	15.7
Q519							
E	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0
B	5.1	5.1	5.1	5.1	5.1	5.1	5.1

VOLTAGE CHARTS (Continued)

Servo/Cyl. Motor

MODE / PIN NO.	STOP	REC	PLAY	REW/ F. FWD	REV/ FWD	REC PAUSE	PLAY PAUSE
IC601							
1	2.7	2.6	2.6	2.7	2.6	2.6	2.6
2	2.6	2.6	2.6	2.6	2.6	2.6	2.6
3	5.2	5.2	5.2	5.2	5.2	5.2	5.2
4	0	2.6	2.6	0	2.7/2.6	2.6	2.6
5	0	2.6	2.6	0	2.5/2.6	2.6	2.6
6	0	2.6	2.6	0	2.5/2.6	2.6	2.6
7	2.6	2.6	2.6	2.6	2.5/2.6	2.6	2.6
8	2.6	2.6	2.6	2.6	2.5/2.6	2.6	2.5
9	0	2.6	2.6	0	2.5/2.7	2.6	2.6
10	0.2	0.2	0.1	2.1	0.4	0.2	2.6
11	0	0	0	0	0	0	0
12	0/5.2	2.6	2.6	2.6	2.7/2.5	0/5.2	2.6
13	2.6	2.6	2.6	2.6	2.7/2.5	2.6	2.6
14	0	2.6	2.6	2.6	2.7/2.5	0	0
15	0	2.6	2.6	2.6	2.7/2.5	0	0
16	0	2.6	2.6	2.6	2.7/2.5	0	0
17	0.1	0.4	0.1	0.5	0.4	0.2	0.4
18	0	2.6	2.6	2.6	2.7/2.5	0	0
19	0.1	0.4	0.1	0.5	0.4	0.2	0.4
20	0	1.0	1.0	2.4	1.8	0	0
21	5.2	5.2	5.2	5.2	5.2	5.2	5.2
22	2.6	2.6	2.6	2.6	2.6	2.6	2.6
23	2.6	2.6	2.6	2.6	2.6	2.6	2.6
24	0	0	0	0	0	0	0
25	2.6	2.6	2.6	2.6	2.6	2.6	2.6
26	2.6	2.6	2.6	2.6	2.6	2.6	2.6
27	2.6	2.6	2.6	2.6	2.6	2.6	2.6
28	2.6	2.6	2.6	2.6	2.6	2.6	2.6
29	2.6	2.6	2.6	2.6	2.6	2.6	2.6
30	0.1	0.1	0.1	0.3	0.3	0.1	0.3
31	0	1.8	1.8	1.8	1.8	0	0
32	5.2	5.2	5.2	5.2	5.2	5.2	5.2
33	0/5.2	0.4	2.0	0	3.3/2.0	0/5.2	5.2
34	5.2	5.2	5.2	5.2	5.2	5.2	5.2
35	2.7	2.7	2.7	2.7	2.7	2.7	2.7
36	2.9	2.9	2.9	2.9	2.9	2.9	2.9
37	0	0	2.6	0/5.2	2.6	0	2.6
38	5.2	2.5	2.6	0/5.2	2.6	2.5	2.6
39	5.2	4.7	4.7	5.2	0	4.7	0
40	0	0	0	0	0.2	0	0.2
41	5.2	5.2	5.2	5.2	5.2	5.2	5.2
42	0.4	0.4	0.4	0.4	0.4	0.4	0.4
43	2.7	2.7	2.7	2.7	2.7	2.7	2.7
44	4.2	4.2	4.2	4.2	4.2	4.2	4.2

Servo/Cyl. Motor

MODE / PIN NO.	STOP	REC	PLAY	REW/ F. FWD	REV/ FWD	REC PAUSE	PLAY PAUSE
45	4.8	4.8	4.8	4.8	4.8	4.8	4.8
46	0.7	0.7	0.7	0.7	0.7	0.7	0.7
47	0	2.4	2.4	2.4	2.4	0	0
48	0	0	0	0	0	0	0
49	0	0	2.6	0	2.6	0	2.6
50	0	0	0	0	0	0	0
51	0	0	0	0	0	0	0
52	0	0	0	0	0	0	0
53	0	0	0	0	0	0	0
54	0	0.3	0.3	0	0.3	0.3	0
55	2.2	2.2	2.2	2.2	2.2	2.2	2.2
56	0	0	0	0	0	0	0
IC602							
1	3.8	3.8	3.8	3.8	3.8	3.8	3.8
2	3.8	3.8	3.8	3.8	3.8	3.8	3.8
3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
4	2.3	2.3	2.3	2.3	2.3	2.3	2.3
5	3.1	3.1	3.1	3.1	3.1	3.1	3.1
6	3.1	3.1	3.1	3.1	3.1	3.1	3.1
7	0	0	0	0	0	0	0
8	0	1.0	1.0	0	1	1	1
9	0	2.6	2.6	0	2.6	2.6	2.6
10	0	0.2	0.2	0	0.2	0.2	0.2
11	2.6	2.6	2.6	2.6	2.6	2.6	2.6
12	2.6	2.6	2.6	2.6	2.6	2.6	2.6
13	2.6	2.6	2.6	2.6	2.6	2.6	2.6
14	2.6	2.6	2.6	2.6	2.6	2.6	2.6
15	2.6	2.6	2.6	2.6	2.6	2.6	2.6
16	2.7	2.6	2.6	2.7	2.6	2.6	2.6
17	0/5.2	2.7	2.7	0/5.2	2.7	2.7	2.7
18	0.6	0.6	0.6	0.6	0.6	0.6	0.6
19	5.2	5.2	5.2	5.2	5.2	5.2	5.2
20	9.0	8.7	8.7	9.0	8.7	8.7	8.7
21	0	2.3	2.3	0	2.3	2.3	2.3
22	0	2.3	2.3	0	2.3	2.3	2.3
23	0	0	0	0	0	0	0
24	0	2.3	2.3	0	2.3	2.3	2.3
25	5.2	5.2	5.2	5.2	5.2	5.2	5.2

VOLTAGE CHARTS (Continued)

Pre Amp, Luma/Chroma

MODE / PIN NO.	STOP	REC	PLAY	REW/ F. FWD	REV/ FWD	REC PAUSE	PLAY PAUSE
IC201							
1	1.2	1.3	1.3	1.2	1.3	1.3	1.3
2	2.7	2.7	2.7	2.7	2.7	2.7	2.7
3	4.9	4.9	4.9	4.9	4.9	4.9	4.9
4	2.7	2.7	2.7	2.7	2.7	2.7	2.7
5	2.8	2.7	2.9	2.8	2.9	2.7	2.9
6	2.9	2.9	3.6	2.9	3.6	2.9	3.6
7	0	-	-	0	-	-	-
8	3.6	3.6	3.6	3.6	3.6	3.6	3.6
9	1.5	1.5	1.5	1.5	1.5	1.5	1.5
10	2.9	2.9	2.9	2.9	2.9	2.9	2.9
11	2.7	2.7	2.7	2.7	2.7	2.7	2.7
12	-	-	-	-	-	-	-
13	-	-	-	-	-	-	-
14	2.7	2.7	2.7	2.7	2.7	2.7	2.7
15	2.2	2.2	2.2	2.2	2.2	2.2	2.2
16	2.1	2.1	2.2	2.1	2.1	2.1	2.2
17	2.8	2.8	2.8	2.8	2.8	2.8	2.8
18	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0
20	2.2	2.2	2.2	2.2	2.2	2.2	2.2
21	2.9	2.9	2.9	2.9	2.9	2.9	2.9
22	0	0	0	0	0	0	0
23	-	-	-	-	-	-	-
24	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-
26	0	0	0	0	0	0	0
27	2.3	2.3	2.2	2.3	2.3	2.3	2.3
28	5.2	5.2	5.2	5.2	5.2	5.2	5.2
29	1.9	1.9	1.9	1.9	1.9	1.9	1.9
30	4.9	4.9	4.9	4.9	4.9	4.9	4.9
31	2.9	2.9	2.9	2.9	2.9	2.9	2.9
32	0	0	0	0	0	0	0
33	0	0	0	0	0	0	0
34	2.8	2.8	2.8	2.8	2.8	2.8	2.8
35	2.8	2.8	2.8	2.8	2.8	2.8	2.8
36	3.0	3.0	2.9	3.0	2.9	3.0	2.9
37	3.2	3.2	3.2	3.2	3.2	3.2	3.2
38	2.1	2.1	2.0	2.1	2.0	2.1	2.0
39	2.2	2.2	2.1	2.2	2.1	2.2	2.1
40	2.2	2.2	1.8	2.2	1.8	2.2	1.8
41	3.2	3.2	1.4	3.2	1.4	3.2	1.4
42	2.8	2.8	3.1	2.8	3.1	2.8	3.1
43	2.5	2.5	2.4	2.5	2.4	2.5	2.4
44	3.1	3.1	3.1	3.1	3.1	3.1	3.1

Pre Amp, Luma/Chroma

MODE / PIN NO.	STOP	REC	PLAY	REW/ F. FWD	REV/ FWD	REC PAUSE	PLAY PAUSE
45	2.3	2.3	2.2	2.3	2.2	2.3	2.2
46	1.7	1.7	1.7	1.7	1.7	1.7	1.7
47	2.9	2.9	2.1	2.9	2.1	2.9	2.1
48	1.5	1.5	1.5	1.5	1.5	1.5	1.5
49	0	0	0.7	0	0.7	0	0.7
50	2.8	2.8	2.7	2.8	2.7	2.8	2.7
51	0	0	0.7	0	0.7	0	0.7
52	2.4	2.4	1.9	2.4	1.9	2.4	1.9
53	1.8	1.8	2.1	1.8	2.1	1.8	2.1
54	1.9	1.9	2.1	1.9	2.1	1.9	2.1
55	0	0	0	0	0	0	0
56	0.2	0.2	0	0	0.2	0	0.2
57	2.4	2.4	2.0	2.4	2.0	2.4	2.0
58	1.0	1.0	2.8	1.0	2.8	1.0	2.8
59	3.0	3.0	4.0	3.0	4.0	3.0	4.0
60	2.1	2.1	2.1	2.1	2.1	2.1	2.1
61	2.2	2.2	2.2	2.2	2.2	2.2	2.2
62	2.1	2.1	2.1	2.1	2.1	2.1	2.1
63	4.9	4.9	4.9	4.9	4.9	4.9	4.9
64	2.8	2.8	2.8	2.8	2.8	2.8	2.8
IC202							
1	-	-	-	-	-	-	-
2	0	0	0	0	0	0	0
3	0	0	5.0	0	5.0	0	5.0
4	0	0	3.3	0	3.3	0	3.3
5	-	-	-	-	-	-	-
6	0	0	2.1	0	2.1	0	2.1
7	-	-	2.6	-	2.6	-	2.6
8	-	-	-	-	-	-	-
IC203							
1	0	0	5.0	0	5.0	0	5.0
2	0	0	2.2	0	2.2	0	2.2
3	0	4.1	0	0	0	4.1	0
4	-	-	-	-	-	-	-
5	0	4.2	0	0	0	4.2	0
6	0	0	0.7	0	0.7	0	0.7
7	0	0	0	0	0	0	0
8	-	-	-	-	-	-	-
9	0	0	0.7	0	0.7	0	0.7
10	0	0	4.2	0	0	4.2	0
11	-	-	-	-	-	-	-
12	0	4.1	0	0	0	4.1	0
13	0	0	2.2	0	2.2	0	2.2
14	0	5.0	0	0	0	5.0	0
15	0	1.7	0	0	0	1.7	0

Continued >

VOLTAGE CHARTS (Continued)

Pre Amp, Luma/Chroma

MODE / PIN NO.	STOP	REC	PLAY	REW/ F. FWD	REV/ FWD	REC PAUSE	PLAY PAUSE
16	0	0	2.1	0	2.1	0	2.1
17	-	-	-	-	-	-	-
18	-	-	-	-	-	-	-
19	0	0	1.5	0	1.5	0	1.5
20	0	0.3	2.1	0	2.1	0.3	2.1
21	0	0	0	0	0	0	0
22	0	0	2.6	0	2.6	0	2.6
23	0	1.7	0.1	0	0.1	1.7	0.1
24	0	0	4.4	0	4.4	0	4.4
25	-	-	-	-	-	-	-
26	0	0	1.7	0	1.7	0	1.7
27	0	0	3.1	0	3.1	0	3.1
28	0	-	-	0	-	-	-
IC204							
1	2.1	2.1	2.2	2.1	2.2	2.1	2.2
2	4.8	4.8	4.8	4.8	4.8	4.8	4.8
3	0	0	0	0	0	0	0
4	-	-	-	-	-	-	-
5	0	0	0	0	0	0	0
6	2.3	2.3	2.1	2.3	2.1	2.3	2.1
7	5.2	5.2	5.2	5.2	5.2	5.2	5.2
8	2.3	2.4	2.4	2.3	2.4	2.4	2.4
Q201							
E	0	0	0	0	0	0	0
C	0.1	0.1	0	0.1	0.1	0.1	0
B	0	0	5.0	0	0	0	5.0
Q202							
E	9.1	8.8	8.9	9.1	8.9	8.8	8.9
C	0	0	0	0	0	0	0
B	9.1	8.9	8.9	9.1	8.9	8.9	8.9
Q203							
E	9.1	8.8	8.8	9.1	9.1	8.8	8.8
C	0	0	0	0	0	0	0
B	8.6	8.8	8.8	8.6	8.6	8.8	8.8
Q204							
E	0	0	0	0	0	0	0
C	8.2	8.8	8.5	8.2	8.2	8.8	8.5
B	0	0	0	0	0	0	0
Q205							
1	0	0	5.0	0	5.0	0	5.0
2	4.9	0.1	4.9	4.9	4.9	0.1	4.9
3	5.2	5.2	5.1	5.2	5.1	5.2	5.1
4	0	5.1	0	0	0	5.1	0
5	4.9	4.9	0.1	4.9	0.1	4.9	0.1
6	5.2	4.9	5.1	5.2	5.1	4.9	5.1

Pre Amp, Luma/Chroma

MODE / PIN NO.	STOP	REC	PLAY	REW/ F. FWD	REV/ FWD	REC PAUSE	PLAY PAUSE
Q207							
1	0	4.1	0	0	0	4.6	0
2	0	4.1	0	0	0	4.6	0
3	0	0	-	0	-	0	-
4	0	0	0	0	0	0	0
5	0	0	-	0	-	0	-
Q208							
E	0	0	0	0	0	0	0
C	0	0	-	0	-	0	-
B	0	5.0	0	0	0	5.0	0
Q209							
E	0	0	0	0	0	0	0
C	2.5	0	2.5	2.5	2.5	0	2.5
B	0	5.0	0	0	0	5.0	0
Q211							
E	0	0	3.2	0	3.2	0	3.2
C	0	0	0	0	0	0	0
B	0	0	2.5	0	2.5	5.0	2.5
Q213							
E	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0
B	0	0	0	0	0	0	0
Q214							
E	0	0	1.4	0	1.4	0	1.4
C	0	0	2.6	0	2.6	0	2.6
B	0	0	2.1	0	2.1	0	2.1
Q217							
E	0	1.8	0	0	0	1.8	0
C	0	5.0	0	0	0	5.0	0
B	0	2.5	0	0	0	2.5	0
Q219							
E	0	1.0	0	0	0	1.0	0
C	0	2.2	0	0	0	2.2	0
B	0	1.7	0	0	0	1.7	0
Q220							
E	0	0	0	0	0	0	0
C	0	1.7	0	0	0	0	0
B	0	0	0	0	0	4.9	0
Q221							
E	0	1.7	0	0	0	1.7	0
C	0	0	0	0	0	0	0
B	1.0	1.0	1.0	1.0	1.0	1.0	1.0

VOLTAGE CHARTS (Continued)

Audio

MODE / PIN NO.	STOP	REC	PLAY	REW/ F. FWD	REV/ FWD	REC PAUSE	PLAY PAUSE
IC401							
1	2.0	2.1	2.0	2.0	2.0	2.1	2.0
2	0	0	0	0	0	0	0
3	4.1	4.1	4.1	4.1	4.1	4.1	4.1
4	4.1	4.1	4.1	4.1	4.1	4.1	4.1
5	9.0	8.9	8.9	9.0	8.9	8.9	8.9
6	8.8	8.8	8.8	8.8	8.8	8.8	8.8
7	0.2	4.4	0.2	0.2	0.2	0	0.2
8	4.1	4.1	4.1	4.1	4.1	4.1	4.1
9	3.5	3.5	3.5	3.5	3.5	3.5	3.5
10	0.3	0.3	0.3	0.3	4.9	0.3	4.9
11	4.1	4.1	4.1	4.1	4.1	4.1	4.1
12	2.5	0.2	4.8	2.5	4.8	0.2	4.8
13	4.1	4.1	4.1	4.1	4.1	4.1	4.1
14	0	0	0	0	0	0	0
15	4.1	4.1	4.1	4.1	4.1	4.1	4.1
16	2.1	2.1	2.1	2.1	2.1	2.1	2.1
17	2.0	2.0	2.0	2.0	2.0	2.0	2.0
18	0	0	0	0	0	0	0
Q401							
E	8.1	8.1	8.1	8.1	8.1	8.1	8.1
C	9.0	8.9	8.9	9.0	9.0	8.9	8.9
B	8.7	8.7	8.7	8.7	8.7	8.7	8.7
Q404							
1	5.3	5.3	5.3	5.3	5.3	5.3	5.3
2	0.8	5.2	0.8	0.8	0.8	0.8	0.8
3	0	0	0	0	0	0	0
4	0.2	4.8	0.2	0.2	0.2	0.2	0.2
5	0.8	5.2	0.8	0.8	0.8	0.8	0.8
6	0.4	4.4	0.4	0.4	0.4	0.5	0.4
Q405							
E	0	0	0	0	0	0	0
C	0.4	4.3	0.4	0.4	0.4	0.4	0.4
B	0.4	0.1	0.4	0.4	0.4	0.4	0.4
Q406							
E	0	0	0	0	0	0	0
C	5.2	5.1	5.2	5.2	5.2	5.2	5.2
B	0	0	0	0	0	0	0
Q414							
E	2.3	2.3	2.3	2.3	2.3	2.3	2.3
C	8.1	8.1	8.1	8.1	8.1	8.1	8.1
B	2.9	2.9	2.9	2.9	2.9	2.9	2.9
Q415							
E	0	0	0	0	0	0	0
C	1.2	1.2	1.2	1.2	1.2	1.2	1.2
B	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Q416							
E	0	0	0	0	0	0	0
C	3.0	3.0	3.0	3.0	3.0	3.0	3.0
B	-	-	-	-	-	-	-
Q417							
E	2.3	2.3	2.3	2.3	2.3	2.3	2.3
C	2.3	2.3	2.3	2.3	2.3	2.3	2.3
B	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Q418							
E	0	0	0	0	0	0	0
C	1.9	1.9	1.9	1.9	1.9	1.9	1.9
B	1.2	1.2	1.2	1.2	1.2	1.2	1.2

CC422
REPLACEMENT PARTS

BEFORE REPLACING PARTS, READ THE FOLLOWING:

Approved Substitute Stock Numbers—Before ordering stock numbers in the parts list, look for an approved substitute stock number in the current Price Schedule. This will minimize your service time and avoid ordering parts you already have in stock.

PRODUCT SAFETY NOTE—Components marked with a (*) have special characteristics important to safety. Before replacing any of these components, read carefully the **PRODUCT SAFETY NOTICE** in the basic service data. Do not degrade the safety of the set through improper servicing. Although assemblies as a whole may not be marked with a (*), replacement of assemblies with other assemblies not approved may result in a safety hazard.

Warranty Status of Assemblies and Parts—All assemblies and components shown in this parts list are eligible for warranty exchange or replacement except those with a dot (•) shown to the left of the Description. Assemblies and components with a dot (•) to the left of the Description are NOT eligible for warranty exchange or replacement.

Warranty replacement of cabinet parts requires the approval of a Thomson Consumer Electronics Field Service Manager.

Warranty Status and Specifications of assemblies and components are subject to change without notice. Consult the TCE Parts Pricing Microfiche for the latest warranty status information.

@NOTE: When ordering components that are listed more than once in this parts list, always adhere to the serial number application guidelines given in the description column. If a serial number application guideline is not given, always select the component with a value, rating, other specification or identification marking(s) that match those of the corresponding component in the instrument you are servicing.

CC422

CC423

COMPLETE ELECTRICAL ASSEMBLIES

SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
	226415		CIRCUIT, CONTROL
	224075		CIRCUIT, END LED
	229550		CIRCUIT, EVF
			CIRCUIT, LCD DRIVE SEE #728
	229564		• CIRCUIT, MAIN CC422
	229548		• CIRCUIT, MAIN CC423
	229549		• CIRCUIT, SENSOR/PROCESS W/OUT CCD
	229505		CIRCUIT, SUPPLY SENSOR W/SAFETY TAB SW & SUPPLY REEL SENSOR
	224076		CIRCUIT, SUPPLY END SENSOR
	224073		CIRCUIT, TAKEUP SENSOR W/TAKEUP END SENSOR/ TAKEUP REEL SENSOR & CASSETTE HOLDER SW

ELECTRICAL COMPONENTS

SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
BL1811	209772		FILTER
BL1812	209772		FILTER
BL1851	197349		FILTER
BL1852	197349		FILTER
C201	194266		CAP LYTC 4.7UF 25V
C202	209489		CAPCC .015UF K 16V
C203	209501		CAPCC .033UF K 16V
C204	194267		CAP LYTC 47UF 6.3V
C205	209498		CAPCC .01UF K 25V
C206	250020		CAPCC 39PF J 50V
C207	148523		CAPCD 150PF J 50V
C208	194270		CAP LYTC 2.2UF 50V
C209	202954		CAPCC 470PF J 50V
C210	184789		CAPCC 56PF J 50V
C211	209488		CAPCC .022UF K 16V
C213	223959		CAPCC .068UF K 16V
C214	184789		CAPCC 56PF J 50V
C215	215666		CAPCC .22UF Z 16V
C217	209498		CAPCC .01UF K 25V
C220	209498		CAPCC .01UF K 25V
C221	194265		CAP LYTC 10UF 16V
C223	161852		CAP LYTC 220UF 6.3V
C224	194267		CAP LYTC 47UF 6.3V
C226	209498		CAPCC .01UF K 25V
C227	194267		CAP LYTC 47UF 6.3V

SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
C229	194271		CAP LYTC 1UF FS 50V
C230	200226		CAP LYTC .47UF 50V
C233	209492		CAPCC .047UF Z 16V
C234	202959		CAP LYTC 2.2UF 6.3V
C235	194265		CAP LYTC 10UF 16V
C236	160717		CAP LYTC 3.3UF 35V
C237	196091		CAPCC .1UF K 25V
C238	194266		CAP LYTC 4.7UF 25V
C239	196091		CAPCC .1UF K 25V
C240	160717		CAP LYTC 3.3UF 35V
C241	209488		CAPCC .022UF K 16V
C243	209498		CAPCC .01UF K 25V
C244	193878		CAPCC 33PF K 50V
C245	209492		CAPCC .047UF Z 16V
C246	192579		CAPCC 330PF J 50V
C247	209491		CAPCC 1UF M 16V
C248	203414		CAPCC 150PF J 50V
C249	215666		CAPCC .22UF Z 16V
C250	209498		CAPCC .01UF K 25V
C251	209498		CAPCC .01UF K 25V
C253	209500		CAPCC .047UF K 16V
C254	194271		CAP LYTC 1UF FS 50V
C257	160737		CAP LYTC 22UF 6.3V
C258	209498		CAPCC .01UF K 25V
C259	196586		CAPCC 2200PF K 50V
C260	209151		CAPCC 1000PF K 50V
C261	194271		CAP LYTC 1UF FS 50V
C262	161852		CAP LYTC 220UF 6.3V
C263	209498		CAPCC .01UF K 25V
C264	184007		CAPCD 100PF J 50V
C265	161852		CAP LYTC 220UF 6.3V
C266	209488		CAPCC .022UF K 16V
C267	250010		CAPCC 82PF K 50V
C268	209488		CAPCC .022UF K 16V
C269	250010		CAPCC 82PF K 50V
C270	209488		CAPCC .022UF K 16V
C271	209488		CAPCC .022UF K 16V
C272	209488		CAPCC .022UF K 16V
C274	194269		CAP LYTC .33UF 50V
C276	193606		CAPCC 47PF J 50V
C277	209488		CAPCC .022UF K 16V
C279	202957		CAPCC 12PF J 50V
C281	193605		CAPCC 33PF J 50V
C283	229427		CAPCC .068UF Z 25V
C284	192574		CAPCC 120PF J 50V
C285	250020		CAPCC 39PF J 50V
C287	193605		CAPCC 33PF J 50V
C288	193605		CAPCC 33PF J 50V
C289	194265		CAP LYTC 10UF 16V
C291	209498		CAPCC .01UF K 25V
C292	209498		CAPCC .01UF K 25V
C294	158964		CAPCC 330PF J 50V
C297	190336		CAPCC 18PF J 50V
C301	209501		CAPCC .033UF K 16V
C302	209501		CAPCC .033UF K 16V
C303	192574		CAPCC 120PF J 50V
C304	209498		CAPCC .01UF K 25V
C307	209498		CAPCC .01UF K 25V

REPLACEMENT PARTS (Continued)

(See Product Safety Note on first page of this parts list)

SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
C309	203414		CAPCC 150PF J 50V
C312	209498		CAPCC .01UF K 25V
C313	209498		CAPCC .01UF K 25V
C316	184007		CAPCD 100PF J 50V
C318	209498		CAPCC .01UF K 25V
C320	209151		CAPCC 1000PF K 50V
C321	209498		CAPCC .01UF K 25V
C338	193605		CAPCC 33PF J 50V
C401	194271		CAP LYTC 1UF FS 50V
C402	229428		CAPCC 5600PF K 50V
C403	223960		CAPCC 1800PF 50V
C404	152267		CAP LYTC 47UF 16V
C406	160388		CAP LYTC 22UF 16V
C407	194265		CAP LYTC 10UF 16V
C409	160388		CAP LYTC 22UF 16V
C410	209491		CAPCC 1UF M 16V
C411	209500		CAPCC .047UF K 16V
C413	209500		CAPCC .047UF K 16V
C414	160737		CAP LYTC 22UF 6.3V
C415	209500		CAPCC .047UF K 16V
C416	209498		CAPCC .01UF K 25V
C417	194265		CAP LYTC 10UF 16V
C418	194265		CAP LYTC 10UF 16V
C419	209151		CAPCC 1000PF K 50V
C422	160717		CAP LYTC 3.3UF 35V
C424	194267		CAP LYTC 47UF 6.3V
C425	209498		CAPCC .01UF K 25V
C426	209501		CAPCC .033UF K 16V
C427	194267		CAP LYTC 47UF 6.3V
C428	209501		CAPCC .033UF K 16V
C429	209498		CAPCC .01UF K 25V
C430	250013		CAP POLY .022UF J 10V
C431	192137		CAP POLY 8200PF J 10V
C432	192641		CAPCC 220PF J 50V
C438	159939		CAP LYTC .1UF 50V
C439	159939		CAP LYTC .1UF 50V
C440	159939		CAP LYTC .1UF 50V
C441	160737		CAP LYTC 22UF 6.3V
C442	209978		CAPCC .1UF Z 25V
C443	194267		CAP LYTC 47UF 6.3V
C447	194265		CAP LYTC 10UF 16V
C451	209978		CAPCC .1UF Z 25V
C454	209491		CAPCC 1UF M 16V
C501	160717		CAP LYTC 3.3UF 35V
C502	225764		CAP LYTC 56UF 16V
C504	225764		CAP LYTC 56UF 16V
C506	209978		CAPCC .1UF Z 25V
C508	225764		CAP LYTC 56UF 16V
C509	209488		CAPCC .022UF K 16V
C510	225764		CAP LYTC 56UF 16V
C512	209978		CAPCC .1UF Z 25V
C513	209978		CAPCC .1UF Z 25V
C514	229429		CAPCC 1UF Z 25V
C515	209491		CAPCC 1UF M 16V
C516	209491		CAPCC 1UF M 16V
C517	209495		CAPCC 4700PF K 50V
C518	209151		CAPCC 1000PF K 50V
C519	209151		CAPCC 1000PF K 50V
C520	209151		CAPCC 1000PF K 50V
C521	209495		CAPCC 4700PF K 50V
C522	209978		CAPCC .1UF Z 25V
C523	209978		CAPCC .1UF Z 25V
C524	209151		CAPCC 1000PF K 50V
C525	194270		CAP LYTC 2.2UF 50V
C526	209495		CAPCC 4700PF K 50V
C528	160388		CAP LYTC 22UF 16V
C529	161026		CAP LYTC 22UF 50V
C601	209978		CAPCC .1UF Z 25V
C602	209978		CAPCC .1UF Z 25V
C603	209978		CAPCC .1UF Z 25V
C604	209488		CAPCC .022UF K 16V
C605	194265		CAP LYTC 10UF 16V
C606	194266		CAP LYTC 4.7UF 25V
C607	196586		CAPCC 2200PF K 50V
C609	229506		CAPCD .33UF Z 50V
C610	209501		CAPCC .033UF K 16V
C611	194265		CAP LYTC 10UF 16V
C613	194269		CAP LYTC .33UF 50V
C614	194265		CAP LYTC 10UF 16V
C615	188603		CAP LYTC .22UF 50V
C616	209151		CAPCC 1000PF K 50V

SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
C617	209151		CAPCC 1000PF K 50V
C618	160737		CAP LYTC 22UF 6.3V
C619	194265		CAP LYTC 10UF 16V
C620	205083		CAPCC 220PF J 50V
C621	209500		CAPCC .047UF K 16V
C623	209151		CAPCC 1000PF K 50V
C624	160717		CAP LYTC 3.3UF 35V
C625	200154		CAP POLY .015UF K 50V
C626	194270		CAP LYTC 2.2UF 50V
C628	209491		CAPCC 1UF M 16V
C901	209978		CAPCC .1UF Z 25V
C904	160737		CAP LYTC 22UF 6.3V
C905	194271		CAP LYTC 1UF FS 50V
C906	209978		CAPCC .1UF Z 25V
C907	209498		CAPCC .01UF K 25V
C908	194903		CAPCC 22PF J 50V
C909	194440		CAPCC 18PF J 50V
C910	209491		CAPCC 1UF M 16V
C911	209491		CAPCC 1UF M 16V
C914	209491		CAPCC 1UF M 16V
C915	209498		CAPCC .01UF K 25V
C916	209498		CAPCC .01UF K 25V
C917	209498		CAPCC .01UF K 25V
C918	209491		CAPCC 1UF M 16V
C919	209978		CAPCC .1UF Z 25V
C921	209151		CAPCC 1000PF K 50V
C922	209498		CAPCC .01UF K 25V
C923	209151		CAPCC 1000PF K 50V
C924	209498		CAPCC .01UF K 25V
C926	209498		CAPCC .01UF K 25V
C927	209498		CAPCC .01UF K 25V
C931	209978		CAPCC .1UF Z 25V
C932	184007		CAPCD 100PF J 50V
C933	193605		CAPCC 33PF J 50V
C934	192574		CAPCC 120PF J 50V
C935	192574		CAPCC 120PF J 50V
C1001	209485		CAPCC .047UF M 16V
C1002	193585		CAP LYTC 47UF 16V
C1003	209491		CAPCC 1UF M 16V
C1004	209491		CAPCC 1UF M 16V
C1005	197703		CAP LYTC 33UF 10V
C1006	209485		CAPCC .047UF M 16V
C1008	209491		CAPCC 1UF M 16V
C1101	209979		CAPCC 22PF J 50V
C1102	209499		CAPCC .1UF K 16V
C1103	209498		CAPCC .01UF K 25V
C1104	202959		CAP LYTC 2.2UF 6.3V
C1106	210454		CAPCC .22UF Z 16V
C1107	184625		CAP LYTC 47UF 6.3V
C1108	209484		CAPCC .01UF M 25V
C1109	193585		CAP LYTC 47UF 16V
C1110	209485		CAPCC .047UF M 16V
C1111	209482		CAPCC .1UF M 16V
C1112	184625		CAP LYTC 47UF 6.3V
C1113	209491		CAPCC 1UF M 16V
C1114	209482		CAPCC .1UF M 16V
C1115	184619		CAP LYTC 22UF 6.3V
C1116	209482		CAPCC .1UF M 16V
C1117	209482		CAPCC .1UF M 16V
C1118	209482		CAPCC .1UF M 16V
C1119	209482		CAPCC .1UF M 16V
C1120	209482		CAPCC .1UF M 16V
C1121	209482		CAPCC .1UF M 16V
C1122	209482		CAPCC .1UF M 16V
C1124	209484		CAPCC .01UF M 25V
C1125	209484		CAPCC .01UF M 25V
C1126	209484		CAPCC .01UF M 25V
C1127	209484		CAPCC .01UF M 25V
C1128	209498		CAPCC .01UF K 25V
C1129	209498		CAPCC .01UF K 25V
C1130	209486		CAPCC 39PF J 50V
C1131	209486		CAPCC 39PF J 50V
C1133	209484		CAPCC .01UF M 25V
C1134	209484		CAPCC .01UF M 25V
C1135	209484		CAPCC .01UF M 25V
C1136	209482		CAPCC .1UF M 16V
C1137	209482		CAPCC .1UF M 16V
C1138	209979		CAPCC 22PF J 50V
C1139	209491		CAPCC 1UF M 16V
C1141	193585		CAP LYTC 47UF 16V
C1142	209484		CAPCC .01UF M 25V

REPLACEMENT PARTS (Continued)

(See Product Safety Note on first page of this parts list)

SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
C1143	184625		CAP LYTC 47UF 6.3V
C1144	229445		CAPCC 22PF G 50V
C1145	162784		CAPCD 68PF J 50V
C1146	216699		CAPCC 82PF J 50V
C1147	209484		CAPCC .01UF M 25V
C1148	209482		CAPCC .1UF M 16V
C1149	209482		CAPCC .1UF M 16V
C1150	209491		CAPCC 1UF M 16V
C1151	209491		CAPCC 1UF M 16V
C1152	209491		CAPCC 1UF M 16V
C1153	196091		CAPCC .1UF K 25V
C1155	210419		CAPCC .1UF Z 25V
C1156	209484		CAPCC .01UF M 25V
C1158	209484		CAPCC .01UF M 25V
C1159	209484		CAPCC .01UF M 25V
C1160	209484		CAPCC .01UF M 25V
C1161	209484		CAPCC .01UF M 25V
C1162	209482		CAPCC .1UF M 16V
C1163	209484		CAPCC .01UF M 25V
C1166	209484		CAPCC .01UF M 25V
C1167	209484		CAPCC .01UF M 25V
C1168	209484		CAPCC .01UF M 25V
C1169	209977		CAPCC .01UF Z 50V
C1170	209977		CAPCC .01UF Z 50V
C1172	196091		CAPCC .1UF K 25V
C1173	209491		CAPCC 1UF M 16V
C1174	209491		CAPCC 1UF M 16V
C1201	209484		CAPCC .01UF M 25V
C1202	223987		CAPCC 270PF 50V
C1203	219845		CAPCC .22UF K 16V
C1204	209484		CAPCC .01UF M 25V
C1205	223985		CAPCC .082UF K 16V
C1207	209484		CAPCC .01UF M 25V
C1208	216692		CAPCC 330PF K 50V
C1210	209484		CAPCC .01UF M 25V
C1211	210460		CAPCC 10PF J 50V
C1212	216695		CAPCC 330PF J 50V
C1216	209484		CAPCC .01UF M 25V
C1217	209484		CAPCC .01UF M 25V
C1219	209484		CAPCC .01UF M 25V
C1301	209484		CAPCC .01UF M 25V
C1302	210426		CAPCC 3300PF K 50V
C1303	210448		CAPCC 4700PF K 50V
C1304	210448		CAPCC 4700PF K 50V
C1305	209484		CAPCC .01UF M 25V
C1306	209484		CAPCC .01UF M 25V
C1307	210426		CAPCC 3300PF K 50V
C1308	210448		CAPCC 4700PF K 50V
C1309	210448		CAPCC 4700PF K 50V
C1310	209484		CAPCC .01UF M 25V
C1311	193585		CAP LYTC 47UF 16V
C1312	209482		CAPCC .1UF M 16V
C1313	209482		CAPCC .1UF M 16V
C1316	209482		CAPCC .1UF M 16V
C1317	209484		CAPCC .01UF M 25V
C1318	209484		CAPCC .01UF M 25V
C1319	209484		CAPCC .01UF M 25V
C1320	209484		CAPCC .01UF M 25V
C1706	209484		CAPCC .01UF M 25V
C1707	202953		CAP LYTC 4.7UF 4V
C1714	210454		CAPCC .22UF Z 16V
C1715	210454		CAPCC .22UF Z 16V
C1716	210454		CAPCC .22UF Z 16V
C2102	209491		CAPCC 1UF M 16V
C2104	209491		CAPCC 1UF M 16V
C2105	209494		CAPCC 6800PF K 50V
C2106	209491		CAPCC 1UF M 16V
C2108	193606		CAPCC 47PF J 50V
C2110	196091		CAPCC .1UF K 25V
C2113	209500		CAPCC .047UF K 16V
C2114	196091		CAPCC .1UF K 25V
C2119	209498		CAPCC .01UF K 25V
C2120	209492		CAPCC .047UF Z 16V
C2121	196091		CAPCC .1UF K 25V
C2122	229532		CAPCC .068UF Z 16V
C2123	229532		CAPCC .068UF Z 16V
C2124	229532		CAPCC .068UF Z 16V
C2125	184007		CAPCD 100PF J 50V
C2126	184007		CAPCD 100PF J 50V
C2127	184007		CAPCD 100PF J 50V
C2136	209491		CAPCC 1UF M 16V

SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
C2141	196091		CAPCC .1UF K 25V
C2183	209491		CAPCC 1UF M 16V
C2186	194266		CAP LYTC 4.7UF 25V
C2188	193585		CAP LYTC 47UF 16V
C5490	182297		CAP LYTC 100UF 6.3V
C5492	223959		CAPCC .068UF K 16V
C5493	223985		CAPCC .082UF K 16V
CN201	223977		CONNECTOR
CN402	194595		CONNECTOR
CN403	229478		CONNECTOR
CN602	194775		CONNECTOR & CABLE
CN902	224013		CONNECTOR
CN903	224012		CONNECTOR
CN905	214693		CONNECTOR
CN909	224011		CONNECTOR
CN912	214660		CONNECTOR
CN1015	224005		CONNECTOR
CN1019	224077		CONNECTOR
CN2101	224133		CONNECTOR
CN2102	229538		CONNECTOR
CN2201	224260		CABLE
CN2203	224132		CONNECTOR
CP201	223978		FILTER
CP202	212794		FILTER
CP1101	229456		FILTER
CX201	223979		CRYSTAL
CX901	223980		CRYSTAL
CX902	212713		CRYSTAL
D1	156795		DIODE LED
D201	229435		DIODE
D202	158969		DIODE
D204	223964		DIODE
D205	158969		DIODE
D208	223964		DIODE
D402	158969		DIODE
D403	229435		DIODE
D404	229435		DIODE
D406	223964		DIODE
D408	223964		DIODE
D501	212774		DIODE
D503	158969		DIODE
D505	158969		DIODE
D506	229435		DIODE
D507	229435		DIODE
D601	223964		DIODE
D901	212774		DIODE
D902	229435		DIODE
D903	158969		DIODE
D904	158969		DIODE
D905	229435		DIODE
D906	229435		DIODE
D910	223964		DIODE
D1101	212774		DIODE
D1102	203295		DIODE
D1301	203290		DIODE
D1302	203290		DIODE
D1303	203290		DIODE
D1702	203295		DIODE
D2101	223964		DIODE
D2102	223964		DIODE
D2103	223964		DIODE
D2181	158969		DIODE
D5490	223964		DIODE
DL201	218028		DELAY LINE
F501	216536		* FUSE
IC201	223469		IC LUMA/CHROMA PROCESS
IC202	223965		IC 1H DELAY
IC203	209473		IC VIDEO HEAD AMP
IC204	219263		IC SYNC SEPA
IC401	229436		IC AUDIO PB/REC AMP
IC501	224240		IC SWITCHING REGULATOR
IC503	212780		TRANSISTOR B+ SW
IC601	223967		IC SERVO CONTROL
IC602	229437		IC CYLINDER MOTOR DRIVE

REPLACEMENT PARTS (Continued)

(See Product Safety Note on first page of this parts list)

SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
IC901	229438		IC SYSTEM CONTROL UP
IC902	209470		IC REG/VOLT DET
IC903	223969		IC CHARA GEN
IC904	219883		IC LOADING MOTOR DRIVE
IC905	192831		IC INV
IC906	219885		IC LEVEL SHIFT
IC1001	229450		IC CCD SENSOR
IC1101	219887		IC CDS/AGC
IC1102	223995		IC A/D CONV
IC1103	229451		IC DIGITAL PROCESS
IC1104	229452		IC DRIVE PULSE GEN
IC1105	174633		IC V SUB GEN
IC1106	229552		IC DIGITAL UP
IC1107	219892		IC EE PROM
IC1201	229453		IC IRIS DRIVE
IC1202	209469		IC IRIS MOTOR
IC1203	203006		IC GAIN SW
IC1301	224248		IC ZOOM MOTOR DRIVE
IC1302	224248		IC FOCUS MOTOR DRIVE
IC1303	229454		IC BUF
IC1701	223999		IC REST
IC2101	229535		IC VIDEO PROCESS
IC2181	229536		IC PWM
JK401	224091		JACK AV
JK501	194144		JACK DC
L201	223971		COIL 12UH
L202	200272		COIL
L205	229443		COIL 100UH
L206	229443		COIL 100UH
L207	223972		COIL 82UH
L209	229443		COIL 100UH
L210	212782		COIL
L212	200276		COIL
L213	200277		COIL
L214	223973		COIL 47UH
L215	200271		COIL
L216	200269		COIL
L218	200274		COIL
L219	229443		COIL 100UH
L221	200270		COIL
L222	200276		COIL
L227	200275		COIL
L231	229444		COIL 820UH
L232	200270		COIL
L233	212791		COIL
L402	212785		COIL
L403	212785		COIL
L501	223974		COIL
L502	223975		COIL
L505	223975		COIL
L506	223974		COIL
L507	212789		COIL
L508	212785		COIL
L509	212791		COIL
L901	200271		COIL
L902	200274		COIL
L1101	204342		COIL
L1102	204342		COIL
L1103	204342		COIL
L1104	209772		FILTER
L1105	209772		FILTER
L1106	204342		COIL
L1107	204342		COIL
L1109	204342		COIL
L1110	204342		COIL
L1114	197349		FILTER
L1115	197349		FILTER
L1116	204342		COIL
L1117	204342		COIL
L1301	204342		COIL
L1302	204342		COIL
L1701	204342		COIL
L2101	229537		COIL 39UH
L2181	224112		COIL 33UH
L2182	210054		COIL
LD901	223982		TRANSISTOR
LI901	219923		* BATTERY, BACKUP

SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
PG201	212796		SOCKET
PG402	177930		CONNECTOR
PG403	182744		CONNECTOR
PG601	223983		CONNECTOR
PG602	182067		CONNECTOR
PG603	177163		CONNECTOR
PG901	212799		CONNECTOR
PG902	200086		CONNECTOR
PG903	197868		CONNECTOR
PG905	177931		CONNECTOR
PG908	192799		CONNECTOR
PG909	182744		CONNECTOR
PG911	180910		CONNECTOR
PG912	185080		CONNECTOR
PG1014	209363		CONNECTOR
PG1015	229457		CONNECTOR
PG1018	212824		CONNECTOR
PG1019	224094		CONNECTOR
PG1301	229458		CONNECTOR
PG1701	224095		CONNECTOR
PG2101	224109		CONNECTOR
PG2102	229539		CONNECTOR
PG2103	209367		CONNECTOR
PG2104	229540		CONNECTOR
PG5490	209370		CONNECTOR
Q1	183053		TRANSISTOR TAKEUP END SENSOR
Q2	194181		TRANSISTOR TAKEUP REEL SENSOR
Q3	183053		TRANSISTOR SUPPLY END SENSOR
Q4	182115		TRANSISTOR SUPPLY REEL SENSOR
Q201	173598		TRANSISTOR SW
Q202	164733		TRANSISTOR BUF
Q203	164733		TRANSISTOR ERASE OSC
Q204	173598		TRANSISTOR ERASE SW CC422
Q204	231241		TRANSISTOR ERASE SW CC423
Q205	229439		TRANSISTOR PB5V/REC 5V SW CC422
Q205	231240		TRANSISTOR PB5V/REC 5V SW CC423
Q207	223991		TRANSISTOR SW
Q208	173598		TRANSISTOR SW
Q209	173598		TRANSISTOR SW
Q211	164733		TRANSISTOR BUF
Q213	173598		TRANSISTOR SW
Q214	159444		TRANSISTOR BUF
Q217	159444		TRANSISTOR BUF
Q219	159444		TRANSISTOR AMP
Q220	203298		TRANSISTOR SW
Q221	164733		TRANSISTOR BUF
Q401	159444		TRANSISTOR 9V SW
Q404	195015		TRANSISTOR OSC ON SW
Q405	162043		TRANSISTOR BIAS OSC
Q406	162043		TRANSISTOR BIAS OSC
Q414	159444		TRANSISTOR AUDIO REC LEVEL
Q415	159444		TRANSISTOR AUDIO REC LEVEL
Q416	159444		TRANSISTOR AUDIO REC LEVEL
Q417	159444		TRANSISTOR AUDIO REC LEVEL
Q418	164733		TRANSISTOR AUDIO REC LEVEL
Q501	216690		TRANSISTOR 5V SW
Q503	194185		TRANSISTOR 9.6V SW
Q506	173598		TRANSISTOR LIGHT SW
Q507	229531		TRANSISTOR LIGHT SW
Q508	217100		TRANSISTOR 9V SW
Q512	217100		TRANSISTOR 6V SW
Q514	217100		TRANSISTOR 3.5V GEN
Q515	224106		TRANSISTOR DC-DC CONV SW
Q516	162043		TRANSISTOR 5V REG
Q519	173598		TRANSISTOR CAPST SW
Q901	223970		TRANSISTOR CHARGE REG

REPLACEMENT PARTS (Continued)

(See Product Safety Note on first page of this parts list)

SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
Q902	195015		TRANSISTOR INV
Q903	159444		TRANSISTOR SW
Q904	173598		TRANSISTOR LED DRIVE
Q905	159444		TRANSISTOR LED DRIVE
Q1001	159042		TRANSISTOR BUF
Q1101	204338		TRANSISTOR BIAS GEN
Q1103	158972		TRANSISTOR 3.3V REG
Q1104	204338		TRANSISTOR BUF
Q1105	204338		TRANSISTOR BUF
Q1106	200266		TRANSISTOR 4.5V GEN
Q1201	203396		TRANSISTOR BIAS GEN
Q1202	204663		TRANSISTOR AMP
Q1203	203400		TRANSISTOR INV
Q1703	205782		TRANSISTOR SW
Q1704	158972		TRANSISTOR 1V GEN
Q1705	200266		TRANSISTOR -7V GEN
Q5490	195015		TRANSISTOR MIC AMP
QF1301	229455		* FUSE 0.2A
R201	195937		RES CCF 1/8W 5% 10K
R202	155009		RES CCF 1/8W 5% 2.2K
R203	174348		RES CCF 1/8W 5% 1K
R204	174348		RES CCF 1/8W 5% 1K
R206	155014		RES CCF 1/8W 5% 150K
R212	192591		RES CCF 1/8W 5% 270R
R213	192596		RES CCF 1/8W 5% 1.2K
R216	203480		RES CCF 1/10W 1% 75R
R221	155136		RES CCF 1/8W 5% 1.8K
R222	174350		RES CCF 1/8W 5% 4.7K
R223	192673		RES CCF 1/8W 5% 2.7K
R224	192673		RES CCF 1/8W 5% 2.7K
R225	155137		RES CCF 1/8W 5% 560R
R226	155136		RES CCF 1/8W 5% 1.8K
R227	158357		RES CCF 1/8W 5% 6.8K
R228	158367		RES CCF 1/8W 5% 22K
R229	162006		RES CCF 1/8W 5% 3.9K
R232	229430		RES CCF 1/10W 1% 390R
R233	192620		RES CCF 1/8W 5% 470R
R234	195937		RES CCF 1/8W 5% 10K
R235	192620		RES CCF 1/8W 5% 470R
R236	223961		RES CCF 1/10W 1% 130K
R239	193649		RES CCF 1/8W 5% 680R
R240	159029		RES CCF 1/8W 5% 120R
R241	192607		REC CCF 1/8W 5% 820R
R242	155260		RES CCF 1/8W 5% 47K
R243	158357		RES CCF 1/8W 5% 68K
R244	192670		RES CCF 1/8W 5% 100R
R245	192753		RES CCF 1/8W 5% 5.6R
R246	192753		RES CCF 1/8W 5% 5.6R
R247	192670		RES CCF 1/8W 5% 100R
R248	174366		RES CCF 1/8W 5% 18K
R249	158367		RES CCF 1/8W 5% 22K
R250	155009		RES CCF 1/8W 5% 2.2K
R253	192607		REC CCF 1/8W 5% 820R
R254	192620		RES CCF 1/8W 5% 470R
R255	193229		RES CCF 1/8W 5% 1.5K
R256	193649		RES CCF 1/8W 5% 680R
R257	193229		RES CCF 1/8W 5% 1.5K
R258	192673		RES CCF 1/8W 5% 2.7K
R259	155009		RES CCF 1/8W 5% 2.2K
R262	155009		RES CCF 1/8W 5% 2.2K
R264	155137		RES CCF 1/8W 5% 560R
R265	193649		RES CCF 1/8W 5% 680R
R266	192596		RES CCF 1/8W 5% 1.2K
R267	192596		RES CCF 1/8W 5% 1.2K
R269	155009		RES CCF 1/8W 5% 2.2K
R270	193229		RES CCF 1/8W 5% 1.5K
R271	192596		RES CCF 1/8W 5% 1.2K
R272	192607		REC CCF 1/8W 5% 820R
R273	193649		RES CCF 1/8W 5% 680R
R274	155137		RES CCF 1/8W 5% 560R
R275	192596		RES CCF 1/8W 5% 1.2K
R276	155160		RES CCF 1/8W 5% 470R
R277	174348		RES CCF 1/8W 5% 1K
R278	155009		RES CCF 1/8W 5% 2.2K
R280	192596		RES CCF 1/8W 5% 1.2K
R282	195678		RES CCF 1/8W 5% 390R
R283	193229		RES CCF 1/8W 5% 1.5K
R284	155137		RES CCF 1/8W 5% 560R
R287	158358		RES CCF 1/8W 5% 82K

SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
R302	178290		RES CCF 1/8W 5% 390K
R307	193229		RES CCF 1/8W 5% 1.5K
R316	192613		RES CCF 1/8W 5% 8.2K
R325	193229		RES CCF 1/8W 5% 1.5K
R326	193229		RES CCF 1/8W 5% 1.5K
R402	193229		RES CCF 1/8W 5% 1.5K
R403	158367		RES CCF 1/8W 5% 22K
R404	195937		RES CCF 1/8W 5% 10K
R405	155137		RES CCF 1/8W 5% 560R
R406	158358		RES CCF 1/8W 5% 82K
R407	174365		RES CCF 1/8W 5% 12K
R410	178299		RES CCF 1/8W 5% 5.6K
R411	193649		RES CCF 1/8W 5% 680R
R412	178299		RES CCF 1/8W 5% 5.6K
R413	192671		RES CCF 1/8W 5% 330K
R414	192620		RES CCF 1/8W 5% 470R
R415	155160		RES CCF 1/8W 5% 470R
R416	155260		RES CCF 1/8W 5% 47K
R417	195937		RES CCF 1/8W 5% 10K
R419	195937		RES CCF 1/8W 5% 10K
R420	158358		RES CCF 1/8W 5% 82K
R421	174348		RES CCF 1/8W 5% 1K
R422	158351		RES CCF 1/8W 5% 100K
R425	174365		RES CCF 1/8W 5% 12K
R428	195937		RES CCF 1/8W 5% 10K
R429	174348		RES CCF 1/8W 5% 1K
R430	174350		RES CCF 1/8W 5% 4.7K
R434	174365		RES CCF 1/8W 5% 12K
R436	174350		RES CCF 1/8W 5% 4.7K
R448	174361		RES CCF 1/8W 5% 1M
R449	192597		RES CCF 1/8W 5% 3.3K
R450	158367		RES CCF 1/8W 5% 22K
R451	174348		RES CCF 1/8W 5% 1K
R452	174350		RES CCF 1/8W 5% 4.7K
R453	174361		RES CCF 1/8W 5% 1M
R454	176813		RES CCF 1/8W 5% 33K
R458	195937		RES CCF 1/8W 5% 10K
R459	158351		RES CCF 1/8W 5% 100K
R461	192673		RES CCF 1/8W 5% 2.7K
R463	203480		RES CCF 1/10W 1% 75R
R469	195937		RES CCF 1/8W 5% 10K
R470	195937		RES CCF 1/8W 5% 10K
R471	162006		RES CCF 1/8W 5% 3.9K
R472	155260		RES CCF 1/8W 5% 47K
R474	192673		RES CCF 1/8W 5% 2.7K
R485	176813		RES CCF 1/8W 5% 33K
R486	162006		RES CCF 1/8W 5% 3.9K
R491	174348		RES CCF 1/8W 5% 1K
R493	155014		RES CCF 1/8W 5% 150K
R494	155160		RES CCF 1/8W 5% 470R
R495	192620		RES CCF 1/8W 5% 470R
R503	174350		RES CCF 1/8W 5% 4.7K
R507	174365		RES CCF 1/8W 5% 12K
R510	158346		RES CCF 1/8W 5% 56K
R511	158367		RES CCF 1/8W 5% 22K
R516	193614		RES CCF 1/8W 5% 180R
R519	192607		REC CCF 1/8W 5% 820R
R522	195678		RES CCF 1/8W 5% 390R
R523	219858		RES CCF 1/16W 5% 22K
R524	229431		RES CCF 1/10W 1% 100R
R525	229430		RES CCF 1/10W 1% 390R
R526	195937		RES CCF 1/8W 5% 10K
R528	174348		RES CCF 1/8W 5% 1K
R529	219858		RES CCF 1/16W 5% 22K
R530	155009		RES CCF 1/8W 5% 2.2K
R531	158373		RES CCF 1/8W 5% 82R
R532	158367		RES CCF 1/8W 5% 22K
R533	155014		RES CCF 1/8W 5% 150K
R535	159035		RES CCF 1/8W 5% 47R
R536	159035		RES CCF 1/8W 5% 47R
R537	159029		RES CCF 1/8W 5% 120R
R540	195678		RES CCF 1/8W 5% 390R
R542	223962		RES CCF 1/16W 5% 6.8K
R543	223962		RES CCF 1/16W 5% 6.8K
R545	195937		RES CCF 1/8W 5% 10K
R546	192670		RES CCF 1/8W 5% 100R
R547	159035		RES CCF 1/8W 5% 47R
R548	155009		RES CCF 1/8W 5% 2.2K
R549	158351		RES CCF 1/8W 5% 100K
R550	192618		RES CCF 1/8W 5% 39R
R551	178299		RES CCF 1/8W 5% 5.6K

REPLACEMENT PARTS (Continued)

(See Product Safety Note on first page of this parts list)

SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
R552	223962		RES CCF 1/16W 5% 6.8K
R553	229432		RES CCF 1/10W 1% 75K
R555	174365		RES CCF 1/8W 5% 12K
R556	203491		RES MF 1/10W 1% 27K
R557	178299		RES CCF 1/8W 5% 5.6K
R558	223962		RES CCF 1/16W 5% 6.8K
R559	223962		RES CCF 1/16W 5% 6.8K
R560	223962		RES CCF 1/16W 5% 6.8K
R561	192597		RES CCF 1/8W 5% 3.3K
R566	192673		RES CCF 1/8W 5% 2.7K
R605	229433		RES CCF 1/4W 10% .39R
R606	176813		RES CCF 1/8W 5% 33K
R607	174350		RES CCF 1/8W 5% 4.7K
R608	174361		RES CCF 1/8W 5% 1M
R609	174348		RES CCF 1/8W 5% 1K
R610	155260		RES CCF 1/8W 5% 47K
R611	223963		RES CCF 1/2W 5% 47R
R613	159035		RES CCF 1/8W 5% 47R
R615	176813		RES CCF 1/8W 5% 33K
R616	195937		RES CCF 1/8W 5% 10K
R617	174361		RES CCF 1/8W 5% 1M
R618	205375		RES CCF 1/8W 5% 270K
R619	155009		RES CCF 1/8W 5% 2.2K
R620	174361		RES CCF 1/8W 5% 1M
R622	176813		RES CCF 1/8W 5% 33K
R623	174361		RES CCF 1/8W 5% 1M
R624	158351		RES CCF 1/8W 5% 100K
R625	158357		RES CCF 1/8W 5% 68K
R626	176813		RES CCF 1/8W 5% 33K
R627	174365		RES CCF 1/8W 5% 12K
R629	174361		RES CCF 1/8W 5% 1M
R630	155014		RES CCF 1/8W 5% 150K
R631	229430		RES CCF 1/10W 1% 390R
R632	229430		RES CCF 1/10W 1% 390R
R633	174348		RES CCF 1/8W 5% 1K
R634	195937		RES CCF 1/8W 5% 10K
R635	158497		RES CCF 1/8W 5% 680K
R636	174348		RES CCF 1/8W 5% 1K
R637	174348		RES CCF 1/8W 5% 1K
R901	203927		RES MF 1/10W 10% 10K
R902	200575		RES MF 1/8W 1% 6.8K
R903	203927		RES MF 1/10W 10% 10K
R904	203491		RES MF 1/10W 1% 27K
R905	193614		RES CCF 1/8W 5% 180R
R906	174348		RES CCF 1/8W 5% 1K
R907	192673		RES CCF 1/8W 5% 2.7K
R908	158351		RES CCF 1/8W 5% 100K
R909	158351		RES CCF 1/8W 5% 100K
R910	195937		RES CCF 1/8W 5% 10K
R911	195937		RES CCF 1/8W 5% 10K
R912	174365		RES CCF 1/8W 5% 12K
R913	174361		RES CCF 1/8W 5% 1M
R914	158968		RES CCF 1/8W 5% 560K
R915	174361		RES CCF 1/8W 5% 1M
R916	174361		RES CCF 1/8W 5% 1M
R917	174361		RES CCF 1/8W 5% 1M
R918	174361		RES CCF 1/8W 5% 1M
R919	174361		RES CCF 1/8W 5% 1M
R920	174361		RES CCF 1/8W 5% 1M
R921	174361		RES CCF 1/8W 5% 1M
R922	155009		RES CCF 1/8W 5% 2.2K
R923	155009		RES CCF 1/8W 5% 2.2K
R924	155009		RES CCF 1/8W 5% 2.2K
R925	155009		RES CCF 1/8W 5% 2.2K
R926	174348		RES CCF 1/8W 5% 1K
R927	174348		RES CCF 1/8W 5% 1K
R928	155260		RES CCF 1/8W 5% 47K
R929	155260		RES CCF 1/8W 5% 47K
R931	158351		RES CCF 1/8W 5% 100K
R932	195937		RES CCF 1/8W 5% 10K
R933	174348		RES CCF 1/8W 5% 1K
R934	155136		RES CCF 1/8W 5% 1.8K
R935	192673		RES CCF 1/8W 5% 2.7K
R936	192597		RES CCF 1/8W 5% 3.3K
R937	225765		RES MF 1/10W 5% 4.3K
R938	158357		RES CCF 1/8W 5% 6.8K
R939	195937		RES CCF 1/8W 5% 10K
R940	155160		RES CCF 1/8W 5% 470R
R941	155160		RES CCF 1/8W 5% 470R
R942	192673		RES CCF 1/8W 5% 2.7K
R943	192673		RES CCF 1/8W 5% 2.7K
R944	162006		RES CCF 1/8W 5% 3.9K
R945	162006		RES CCF 1/8W 5% 3.9K
R946	192673		RES CCF 1/8W 5% 2.7K
R947	162006		RES CCF 1/8W 5% 3.9K
R949	158351		RES CCF 1/8W 5% 100K
R950	192596		RES CCF 1/8W 5% 1.2K
R951	195937		RES CCF 1/8W 5% 10K
R952	195937		RES CCF 1/8W 5% 10K
R953	195937		RES CCF 1/8W 5% 10K
R954	195937		RES CCF 1/8W 5% 10K
R955	195937		RES CCF 1/8W 5% 10K
R956	174350		RES CCF 1/8W 5% 4.7K
R957	174350		RES CCF 1/8W 5% 4.7K
R958	174350		RES CCF 1/8W 5% 4.7K
R959	174350		RES CCF 1/8W 5% 4.7K
R960	174350		RES CCF 1/8W 5% 4.7K
R961	155260		RES CCF 1/8W 5% 47K
R962	174348		RES CCF 1/8W 5% 1K
R963	174348		RES CCF 1/8W 5% 1K
R964	174348		RES CCF 1/8W 5% 1K
R965	155009		RES CCF 1/8W 5% 2.2K
R966	155009		RES CCF 1/8W 5% 2.2K
R967	158357		RES CCF 1/8W 5% 68K
R968	155009		RES CCF 1/8W 5% 2.2K
R969	192600		RES CCF 1/8W 5% 220R
R970	192600		RES CCF 1/8W 5% 220R
R971	192600		RES CCF 1/8W 5% 220R
R972	192600		RES CCF 1/8W 5% 220R
R973	192600		RES CCF 1/8W 5% 220R
R975	223962		RES CCF 1/16W 5% 6.8K
R976	174350		RES CCF 1/8W 5% 4.7K
R977	203927		RES MF 1/10W 10% 10K
R978	203927		RES MF 1/10W 10% 10K
R979	155009		RES CCF 1/8W 5% 2.2K
R980	155009		RES CCF 1/8W 5% 2.2K
R981	174348		RES CCF 1/8W 5% 1K
R982	174348		RES CCF 1/8W 5% 1K
R983	158373		RES CCF 1/8W 5% 82R
R992	158351		RES CCF 1/8W 5% 100K
R995	174348		RES CCF 1/8W 5% 1K
R996	229434		RES CCF 1/10W 1% 560K
R1001	210266		RES CCF 1/16W 5% 6.8K
R1002	209523		RES CCF 1/16W 5% 100R
R1003	210274		RES CCF 1/16W 5% 1M
R1004	210274		RES CCF 1/16W 5% 1M
R1011	209523		RES CCF 1/16W 5% 100R
R1102	210288		RES CCF 1/16W 5% 220K
R1103	209512		RES CCF 1/16W 5% 10K
R1104	209519		RES CCF 1/16W 5% 1K
R1105	209509		RES CCF 1/16W 5% 22K
R1106	209510		RES CCF 1/16W 5% 15K
R1107	209522		RES CCF 1/16W 5% 220R
R1108	209522		RES CCF 1/16W 5% 220R
R1109	210253		RES CCF 1/16W 5% 470R
R1110	210253		RES CCF 1/16W 5% 470R
R1113	210322		RES CCF 1/16W 5% 47R
R1114	216756		RES CCF 1/16W 1% 3.9K
R1115	229551		RES CCF 1/16W 1% 200K
R1116	210261		RES CCF 1/16W 5% 1.2K
R1117	209518		RES CCF 1/16W 5% 2.2K
R1118	209518		RES CCF 1/16W 5% 2.2K
R1119	209519		RES CCF 1/16W 5% 1K
R1120	219865		RES CCF 1/16W 1% 1.24K
R1121	216760		RES CCF 1/16W 1% 5.6K
R1122	210326		RES CCF 1/16W 1% 120K
R1123	203463		RES CCF 1/16W 1% 1K
R1124	209519		RES CCF 1/16W 5% 1K
R1125	219873		RES CCF 1/16W 1% 4.7K
R1126	204347		RES CCF 1/16W 1% 1.5K
R1130	210274		RES CCF 1/16W 5% 1M
R1131	209520		RES CCF 1/16W 5% 560R
R1132	229446		RES CCF 1/16W 1% 3.3K
R1133	216761		RES CCF 1/16W 1% 6.8K
R1136	209512		RES CCF 1/16W 5% 10K
R1137	209517		RES CCF 1/16W 5% 2.7K
R1138	209506		RES CCF 1/16W 5% 100K
R1139	209514		RES CCF 1/16W 5% 4.7K
R1140	209509		RES CCF 1/16W 5% 22K
R1141	210259		RES CCF 1/16W 5% 33K
R1142	209520		RES CCF 1/16W 5% 560R
R1143	210271		RES CCF 1/16W 5% 47K

REPLACEMENT PARTS (Continued)

(See Product Safety Note on first page of this parts list)

SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
R1146	209519		RES CCF 1/16W 5% 1K
R1147	209519		RES CCF 1/16W 5% 1K
R1148	209512		RES CCF 1/16W 5% 10K
R1149	209512		RES CCF 1/16W 5% 10K
R1150	209519		RES CCF 1/16W 5% 1K
R1151	209519		RES CCF 1/16W 5% 1K
R1171	210261		RES CCF 1/16W 5% 1.2K
R1172	210271		RES CCF 1/16W 5% 47K
R1201	209523		RES CCF 1/16W 5% 100R
R1202	209523		RES CCF 1/16W 5% 100R
R1203	210263		RES CCF 1/16W 5% 1.5K
R1204	209512		RES CCF 1/16W 5% 10K
R1205	209510		RES CCF 1/16W 5% 15K
R1206	209504		RES CCF 1/16W 5% 270K
R1207	209506		RES CCF 1/16W 5% 100K
R1208	210274		RES CCF 1/16W 5% 1M
R1209	209506		RES CCF 1/16W 5% 100K
R1213	209514		RES CCF 1/16W 5% 4.7K
R1214	210277		RES CCF 1/16W 5% 330R
R1215	209506		RES CCF 1/16W 5% 100K
R1217	209511		RES CCF 1/16W 5% 12K
R1218	209510		RES CCF 1/16W 5% 15K
R1219	209510		RES CCF 1/16W 5% 15K
R1220	210282		RES CCF 1/16W 5% 330R
R1221	210288		RES CCF 1/16W 5% 220K
R1222	210282		RES CCF 1/16W 5% 330K
R1223	210288		RES CCF 1/16W 5% 220K
R1224	209506		RES CCF 1/16W 5% 100K
R1225	209506		RES CCF 1/16W 5% 100K
R1226	209506		RES CCF 1/16W 5% 100K
R1230	209506		RES CCF 1/16W 5% 100K
R1231	216761		RES CCF 1/16W 1% 6.8K
R1232	216760		RES CCF 1/16W 1% 5.6K
R1233	223994		RES CCF 1/16W 5% 56K
R1234	210264		RES CCF 1/16W 5% 27K
R1236	210254		RES CCF 1/16W 5% 180R
R1237	209512		RES CCF 1/16W 5% 10K
R1239	209514		RES CCF 1/16W 5% 4.7K
R1301	210276		RES CCF 1/16W 5% 390R
R1302	210276		RES CCF 1/16W 5% 390R
R1303	210276		RES CCF 1/16W 5% 390R
R1304	210276		RES CCF 1/16W 5% 390R
R1306	195943		RES CCF 1/8W 5% 3.9R
R1308	209512		RES CCF 1/16W 5% 10K
R1309	209512		RES CCF 1/16W 5% 10K
R1310	195943		RES CCF 1/8W 5% 3.9R
R1313	195943		RES CCF 1/8W 5% 3.9R
R1315	209512		RES CCF 1/16W 5% 10K
R1316	209512		RES CCF 1/16W 5% 10K
R1317	195943		RES CCF 1/8W 5% 3.9R
R1322	209507		RES CCF 1/16W 5% 56K
R1323	209507		RES CCF 1/16W 5% 56K
R1330	223989		RES CCF 1/16W 1% 2.87K
R1331	209506		RES CCF 1/16W 5% 100K
R1332	209506		RES CCF 1/16W 5% 100K
R1391	210270		RES CCF 1/16W 5% 5.6K
R1701	209511		RES CCF 1/16W 5% 12K (SEE NOTE@)
R1701	161223		RES CF 1/8W 5% 1K (SEE NOTE@)
R1702	209512		RES CCF 1/16W 5% 10K
R1703	209520		RES CCF 1/16W 5% 560R
R1704	209519		RES CCF 1/16W 5% 1K
R1705	209515		RES CCF 1/16W 5% 3.9K
R1709	209506		RES CCF 1/16W 5% 100K (SEE NOTE@)
R1709	161223		RES CF 1/8W 5% 1K (SEE NOTE@)
R1710	161328		RES CF 1/8W 5% 12K (SEE NOTE@)
R1710	209506		RES CCF 1/16W 5% 100K (SEE NOTE@)
R1711	209506		RES CCF 1/16W 5% 100K
R1712	209519		RES CCF 1/16W 5% 1K
R1715	209506		RES CCF 1/16W 5% 100K
R1716	209506		RES CCF 1/16W 5% 100K
R1717	209519		RES CCF 1/16W 5% 1K
R1718	209519		RES CCF 1/16W 5% 1K
R1719	229447		RES CCF 1/16W 1% 9.1K
R1720	229448		RES CCF 1/16W 1% 2.7K
R1721	229449		RES CCF 1/16W 1% 12K
R1723	205109		RES CCF 1/16W 1% 1.43K
R1724	209519		RES CCF 1/16W 5% 1K
R1725	210699		RES CCF 1/16W 5% 750R
R1726	203464		RES CCF 1/16W 1% 15K
R1727	210266		RES CCF 1/16W 5% 6.8K
R1801	209522		RES CCF 1/16W 5% 220R
R1802	209522		RES CCF 1/16W 5% 220R
R1803	209522		RES CCF 1/16W 5% 220R
R1804	209522		RES CCF 1/16W 5% 220R
R1805	209522		RES CCF 1/16W 5% 220R
R1813	209514		RES CCF 1/16W 5% 4.7K
R1814	209514		RES CCF 1/16W 5% 4.7K
R1815	209514		RES CCF 1/16W 5% 4.7K
R2101	192597		RES CCF 1/8W 5% 3.3K
R2102	178299		RES CCF 1/8W 5% 5.6K
R2103	174348		RES CCF 1/8W 5% 1K
R2104	229534		RES CCF 1/16W 5% 18K
R2105	174361		RES CCF 1/8W 5% 1M
R2106	155139		RES CCF 1/8W 5% 180K
R2107	155014		RES CCF 1/8W 5% 150K
R2110	155009		RES CCF 1/8W 5% 2.2K
R2111	162006		RES CCF 1/8W 5% 3.9K
R2112	192597		RES CCF 1/8W 5% 3.3K
R2113	162006		RES CCF 1/8W 5% 3.9K
R2115	174361		RES CCF 1/8W 5% 1M
R2118	178299		RES CCF 1/8W 5% 5.6K
R2119	174348		RES CCF 1/8W 5% 1K
R2125	174350		RES CCF 1/8W 5% 4.7K
R2126	174350		RES CCF 1/8W 5% 4.7K
R2128	162006		RES CCF 1/8W 5% 3.9K
R2129	162006		RES CCF 1/8W 5% 3.9K
R2140	192613		RES CCF 1/8W 5% 8.2K
R2142	155009		RES CCF 1/8W 5% 2.2K
R2148	158367		RES CCF 1/8W 5% 22K
R2153	158367		RES CCF 1/8W 5% 22K
R2154	158367		RES CCF 1/8W 5% 22K
R2181	158367		RES CCF 1/8W 5% 22K
R2182	158357		RES CCF 1/8W 5% 6.8K
R2183	178299		RES CCF 1/8W 5% 5.6K
R5490	174348		RES CCF 1/8W 5% 1K
R5491	195937		RES CCF 1/8W 5% 10K
R5492	158357		RES CCF 1/8W 5% 6.8K
R5493	174361		RES CCF 1/8W 5% 1M
R5494	192618		RES CCF 1/8W 5% 39R
R5495	174348		RES CCF 1/8W 5% 1K
RT601	216573		RES CONTROL PG SHIFTER
RT2101	216575		RES CONTROL BRIGHT
RT2102	229533		RES TRIMMER 4.7K
RT2103	229533		RES TRIMMER 4.7K
RT2104	212772		RES CONTROL CONTRAST
RT2105	210291		RES CONTROL SUB BRIGHT (R)
RT2106	210291		RES CONTROL SUB BRIGHT (B)
RT2181	212772		RES CONTROL EVF REF V
RV2101	224102		RES CONTROL BRIGHT
S1	198936		SWITCH
S2	183030		SWITCH
S401	224092		SWITCH
S901	210311		SWITCH
S902	200288		SWITCH
S903	200288		SWITCH
S904	200288		SWITCH
S905	200288		SWITCH
S906	200288		SWITCH
S907	223984		SWITCH
S908	223984		SWITCH
S909	200288		SWITCH
S910	200288		SWITCH
S911	200288		SWITCH
S912	173668		SWITCH
S1703	212825		SWITCH
S1708	224096		SWITCH
T401	194190		TRANSFORMER BIAS
T402	198954		COIL
T501	229441		FILTER
T502	229442		TRANSFORMER

REPLACEMENT PARTS (Continued)

(See Product Safety Note on first page of this parts list)

SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
X1101	224004		CRYSTAL
X2101	224108		CRYSTAL
Z203	187360		DIODE
Z205	187360		DIODE
Z501	229440		DIODE ZENER
Z901	164216		DIODE
ZD2181	182041		DIODE ZENER

MECHANICAL ASSEMBLY

NOTE: SOME PARTS WITH ITEM NUMBERS ON EXPLODED VIEWS MAY NOT BE AVAILABLE SEPARATELY, OR MAY BE AVAILABLE ONLY AS PART OF AN ASSEMBLY.

SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
101	229561		COVER, CASSETTE CC422
101	229523		COVER, CASETTE CC423
102	226408		CAP
103	224016		FRONT, COVER
104	224017		HINGE
105	229524		CASE, SIDE (R)
106	224019		BRACKET, TRIPOD
107	229562		CASE, SIDE (L) CC422
107	229541		CASE, SIDE (L) CC423
108	229483		STRAP, HAND
110			NON-STOCK PART
111	224022		SWITCH
112	224023		HANDLE, ASY
113	224117		KNOB, POWER CC422
113	224024		KNOB, POWER CC423
114	224025		SLIDE, POWER
115	224026		HOLDER, POWER KNOB
116	219982		SPRING
117	225750		COVER, JACK
119	224028		TERMINAL, BATTERY
121	227325		HOLDER, HANDLE
130	231220		LEVER, LOCK
201			NON-STOCK PART
202	214671		ARM, LOCK
203	207109		SPRING
204	218038		ARM, CAM
205	229484		GEAR
206	218039		GEAR, LOADING
208	194069		ARM, OPERATION
209	229485		GEAR
210	229486		MOTOR, CAPSTAN
211	203032		SWITCH
212	229607		BLOCK, LOADING (R) CC422
212	231214		BLOCK, LOADING (R) CC423
213	196153		HOLDER
214	224036		BELT
215	218345		SLIDER
216	225751		REEL, TAKEUP
217	189098		WASHER
218	156798		WASHER
219	198859		BRAKE
221	194062		BRAKE, SUB
222	198058		SPRING
223	231212		GEAR, LOADING (I)
224	231213		GEAR, LOADING (O)
225	218040		BASE, CYLINDER CC422
225	231215		BASE, CYLINDER CC423
229	212892		BASE, GUIDE ROLLER (IN)
230	200369		ROLLER
231	212893		BASE, GUIDE ROLLER (OUT)
232	224037		PLATE
235	198062		SPRING
236	197589		BAND, TENSION
237	224038		ARM
238	197577		SLIDER
239	156798		WASHER
240	216437		ROLLER, LINK PRESSUR
241	208001		ARM, PRESSURE ROLLER
242	200372		SPRING
243	194810		SPRING
244	229608		ARM, HEAD
245	194080		SPRING
246	182917		NUT
247	212859		ARM
248	194077		SPRING
249	202165		PLATE
251	229609		GUIDE
252	198917		BRUSH
253	229554		HOLDER, CASSETTE ASY CC422
253	231216		HOLDER, CASSETTE ASY CC423
254	224040		REEL, SUPPLY
256	229487		HEAD, AUDIO CONTROL
257	178333		SPRING
261	224041		HEAD, FULL ERASE
262	212863		GUIDE
274	224042		SPRING
277	214685		CLAMP
280	229610		BLOCK, LOADING
501	197347		HEAD, UPPER CYLINDER
502	229489		MOTOR, LOWER CYLINDER
601	229490		LENS, ZOOM, ASY
602	229491		CRYSTAL
603	229492		GASKET
604			SEE #IC1001
605	231851		FRAME, LENS
606	229611		CAP, HOOD
607	229493		RING
700	229542		● EVF, COMPLETE ASY
701	229543		IC
702	224256		DISPLAY, LIQUID CRYSTAL
703	229495		MICROPHONE
705	224120		LAMP
706	224257		BULB
707	229544		CASE, BOTTOM
708	224122		CASE, EVF (L)
709	226347		CASE, EVF RIGHT
710	229545		HOLDER, LCD
711	229546		COVER, LIGHT
712	231265		HOLDER
713	231266		HOLDER, EYE CUP
714	229547		CAP, EYE
715	224128		KNOB
716	224062		COVER, FRONT
717	224129		COVER, LIGHT
718	231852		FRAME
719	229613		HOLDER, CORD
720	229614		GUIDE, WIRE
721	224130		COVER, SHOE
722	224131		CASE, UPPER
728	229563		IC
730	231853		CIRCUIT, LCD DRIVE
731	231854		COVER
901	200384		SCREW
902	159473		SCREW
903	209259		SCREW
904	173645		SCREW
905	229500		SCREW
906	229501		SCREW
907	229502		SCREW, 2MMD X 4MM
908	204473		SCREW, 2MMD X 5MM
909	180489		SCREW
910	224066		SCREW
911	161292		SCREW, 2MMD X 6MM
912	180480		SCREW
951	218510		SCREW, 2MMD X 6MM
952	152118		SCREW, 3MMD X 8MM
953	198820		SCREW
954	182947		SCREW
955	174796		SCREW, 2MMD X 10MM
956	224067		SCREW
957	220530		SCREW
958	174786		SCREW
959	161292		SCREW, 2MMD X 6MM
960	160212		SCREW
961	162628		SCREW, 2MMD X 4MM
963	218048		SCREW
964	224068		SCREW

REPLACEMENT PARTS (Continued)

(See Product Safety Note on first page of this parts list)

SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
965	212862		WASHER
966	162602		SCREW, 2MMD X 8MM

AC ADAPTER (221355)
(COMPONENTS FOR 221356 IN NEXT SECTION)

COMPLETE ELECTRICAL ASSEMBLY

SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
			CIRCUIT, MAIN (ONLY COMPONENTS AVAILABLE)
C2	203421		CAPCC .1UF 25V
C3	203426		CAPCC .022PF 50V
C4	192572		CAPCC .01UF 50V
C5	231225		CAPCC .22PF 16V
C6	203458		CAPCC .047UF 25V
C7	203458		CAPCC .047UF 25V
C8	203433		CAPCC 47PF 50V
C9	203458		CAPCC .047UF 25V
C10	192572		CAPCC .01UF 50V
C11	203458		CAPCC .047UF 25V
C101	183864		* CAP POLY .1UF 250V
C102	203424		* CAPCC 3300PF
C103	203424		* CAPCC 3300PF
C104	203420		* CAPCC 2200PF
C105	202954		* CAPCC 470PF
C106	202954		* CAPCC 470PF
C107	195401		CAP LYTC 68UF 200V
C108	231226		* CAPCC 220PF 1KV
C109	231227		* CAPCC 3300PF 250V
C110	201738		CAP POLY .22UF 50V
C111	187252		CAP POLY 6800PF 50V
C112	203421		CAPCC .1UF 25V
C202	179226		CAP LYTC 680UF 35V
C203	203421		CAPCC .1UF 25V
C204	194581		CAP LYTC 100UF 25V
C205	159666		CAP LYTC 10UF 50V
C206	203458		CAPCC .047UF 25V
C207	203458		CAPCC .047UF 25V
C208	203421		CAPCC .1UF 25V
D1	189609		DIODE
D101	231228		* DIODE
D102	184099		* DIODE
D103	148771		DIODE
D104	184099		DIODE
D105	148771		DIODE
D106	148771		DIODE
D107	231229		DIODE
D108	231229		DIODE
D201	190206		DIODE
D202	231230		DIODE
D203	148771		DIODE
D204	148771		DIODE
D206	148771		DIODE
D207	148771		DIODE
D208	148771		DIODE
D209	148771		DIODE
F101	231231		* FUSE 1.6A
IC2	231232		* IC ADP/CHG UP
JK201	231234		JACK
L101	231235		* COIL
L201	231236		COIL
L202	231237		COIL
L204	231237		COIL
PC201	231233		* IC REF V GEN
PD201	209158		DIODE
PD202	209158		DIODE
Q1	225269		TRANSISTOR SW
Q2	193829		TRANSISTOR SW
Q3	225269		TRANSISTOR SW
Q4	226338		TRANSISTOR SW
Q102	231238		* TRANSISTOR SW
Q103	231239		* TRANSISTOR SW
Q201	200632		TRANSISTOR CHARGE SW
Q202	200688		TRANSISTOR CHARGE SW
Q203	231240		TRANSISTOR PROTECT
Q204	231241		TRANSISTOR PROTECT
Q205	231240		TRANSISTOR PROTECT
R2	196998		RES CCF 1/10W 5% 100K
R4	225242		RES CCF 1/10W 5% 3.4K
R5	225243		RES CCF 1/10W 5% 2.4K
R6	225244		RES CCF 1/10W 5% 1K
R7	225244		RES CCF 1/10W 5% 1K
R9	231242		RES CCF 1/10W 5% 330R
R10	191009		RES CCF 1/10W 5% 180R
R11	225244		RES CCF 1/10W 5% 1K
R12	231243		RES CCF 1/10W 5% 4.7K
R13	225244		RES CCF 1/10W 5% 1K
R14	231243		RES CCF 1/10W 5% 4.7K
R15	225244		RES CCF 1/10W 5% 1K
R16	188532		RES CCF 1/10W 5% 18K
R17	195057		RES CCF 1/10W 5% 3.3K
R18	231244		RES CCF 1/10W 5% 10.5K
R19	231243		RES CCF 1/10W 5% 4.7K
R20	225244		RES CCF 1/10W 5% 1K
R21	205349		RES CCF 1/10W 5% 8.2K
R22	231245		RES CCF 1/10W 5% 158K
R24	231246		RES CCF 1/10W 5% 7.32K
R25	184038		RES CCF 1/10W 5% 820R
R26	191047		RES CCF 1/10W 5% 10K
R27	188546		RES CCF 1/10W 5% 680R
R28	184038		RES CCF 1/10W 5% 820R
R29	231247		RES CCF 1/8W 5% 15R
R30	231247		RES CCF 1/8W 5% 15R
R31	231247		RES CCF 1/8W 5% 15R
R32	225249		RES CCF 1/10W 5% 80.6K
R33	225250		RES CCF 1/10W 5% 26.7K
R35	225252		RES CCF 1/10W 5% 82K
R36	200022		RES CCF 1/8W 5% 220R
R38	225253		RES CCF 1/10W 5% 100R
R39	196998		RES CCF 1/10W 5% 100K
R101	180028		* RES CF 1/2W 5% 1M
R102	194879		* RES CF 1/2W 5% 4.7M
R104	194855		RES CCF 1/8W 5% 5.6K
R105	176673		* RES MF 1W 100R
R106	192605		RES CCF 1/8W 5% 470R
R107	128273		* RES MF 1W 100K
R109	188180		* RES CF 1/2W 220K
R110	225247		* RES CCF 1/8W 5% 7.32K
R111	178621		* RES MF 2W 100R
R112	200022		RES CCF 1/8W 5% 220R
R113	231248		* RES CCF 1/8W 5% 430R
R201	201726		* RES MF 1W 5% .1R
R202	201726		* RES MF 1W 5% .1R
R203	231249		* RES CCF 1/2W 5% 820R
R204	225259		RES CCF 1/8W 5% 3.3K
R205	195937		RES CCF 1/8W 5% 10K
R206	225263		RES CCF 1/8W 5% 22K
R207	231250		THERMISTOR
R208	194384		RES CCF 1/8W 5% 22R
R209	225262		RES CCF 1/8W 5% 750R
R210	231251		RES CCF 1/8W 5% 205K
R212	231252		RES CCF 1/8W 5% 1K
R213	231252		RES CCF 1/8W 5% 1K
R214	250132		RES CCF 1/8W 5% 150R
R215	231252		RES CCF 1/8W 5% 1K
R216	192600		RES CCF 1/8W 5% 220R
R217	231253		RES CCF 1/8W 5% 2.7K
R218	231252		RES CCF 1/8W 5% 1K
R219	192607		RES CCF 1/8W 5% 820R
R220	194384		RES CCF 1/8W 5% 22R
RV201	231254		RES CONTROL REF VOL GATE
RV202	231255		RES CONTROL CHARGE VOLTAGE
T101	231268		* TRANSFORMER POWER
ZD101	231256		* DIODE ZENER

REPLACEMENT PARTS (Continued)

(See Product Safety Note on first page of this parts list)

SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
ZD102	206909		* DIODE ZENER
ZD201	225271		* DIODE ZENER
ZD202	231257		DIODE ZENER
ZD203	231260		DIODE ZENER
ZD204	231258		* DIODE ZENER
ZD205	231259		DIODE ZENER
ZD206	231259		DIODE ZENER
ZD207	206909		DIODE ZENER
ZD208	231260		DIODE ZENER

MECHANICAL ASSEMBLY

SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
751	231261		CASE, UPPER
752	231262		CASE, LOWER
753	231263		SCREW, SPECIAL
754	231264		* CABLE, POWER

AC ADAPTER 221356)

(COMPONENTS FOR 21355 IN PREVIOUS SECTION)

COMPLETE ELECTRICAL ASSEMBLY

SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
			CIRCUIT, MAIN (ONLY COMPONENTS AVAILABLE)

ELECTRICAL COMPONENTS

SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
C1	183866		* CAP POLY .1UF M 250V
C2	201728		* CAPCD 1000PF M 125V
C3	188231		* CAPCD 2200PF 125V
C4	156266		CAP LYTC 33UF 50V
C5	201728		* CAPCD 1000PF M 125V
C6	188231		* CAPCD 2200PF 125V
C7	229510		* CAPCD 68UF 200V
C8	229511		CAPCD .01UF 500V
C9	229512		* CAPCD 47UF 1KV
C10	219935		CAPCC .047UF K 50V
C11	209495		CAPCC 4700PF K 50V
C12	209151		CAPCC 1000PF K 50V
C13	209494		CAPCC 6800PF K 50V
C14	220056		CAPCC .1UF 50V
C51	229513		CAPCD .1UF 500V
C52	229514		CAP LYTC .012UF 16V
C53	189978		CAP LYTC 220UF 16V
C54	183866		CAP POLY .1UF M 250V
C55	162895		CAP LYTC 22UF 6V
C56	162895		CAP LYTC 22UF 6V
C57	178833		CAP LYTC 22UF 16V
C59	162895		CAP LYTC 22UF 6V
C61	220056		CAPCC .1UF 50V
C62	219935		CAPCC .047UF K 50V
C63	192666		CAPCC .01UF K 50V
C64	192666		CAPCC .01UF K 50V
C65	209495		CAPCC 4700PF K 50V
C66	219936		CAPCC .068UF K 25V
C67	209151		CAPCC 1000PF K 50V
C68	209495		CAPCC 4700PF K 50V
CX51	229476		CRYSTAL
D1	198052		* DIODE
D3	219946		DIODE
D51	229467		DIODE
D52	229468		DIODE
D55	159065		DIODE
D56	159065		DIODE
D57	159064		DIODE
D58	158487		DIODE
F1	229477		* FUSE
IC1	219951		* IC SWITCHING CONT
IC2	219950		* IC PHOTO COUPLER
IC51	229469		* IC ADP/CHG UP
IC52	174633		IC CHG OVER CURRENT
IC53	174633		IC CURRENT CONT
IC54	184151		IC REF V GEN
JK51	226341		JACK, DC
L1	194199		* COIL 8.5UH
L2	194199		* COIL 8.5UH
L3	229473		COIL
L4	229474		COIL
L51	204779		COIL
L52	217082		FILTER
L53	229475		COIL
LD51	219949		DIODE
LD52	219949		DIODE
Q1	229470		* TRANSISTOR SW
Q51	187843		TRANSISTOR CHARGE SW
Q52	161123		TRANSISTOR CHARGE SW
Q53	181533		TRANSISTOR SW
R1	150208		* RES CF 1/4W 5% 1M
R2	191757		* RES FUSE
R3	182371		* RES MF 1/2W 5% .22R
R4	179297		* RES MF 1/2W 5% 68R
R5	194879		* RES MF 1/2W 5% 4.7M
R6	181098		* RES MF 1/10W 5% 10R
R10	192670		* RES CCF 1/8W 5% 100R
R11	174364		RES CCF 1/8W 5% 10K
R12	195678		RES CCF 1/8W 5% 390R
R13	174350		RES CCF 1/8W 5% 4.7K
R14	195937		RES CCF 1/8W 5% 10K
R15	155260		RES CCF 1/8W 5% 47K
R16	192600		RES CCF 1/8W 5% 220R
R17	155013		RES CCF 1/8W 5% 180R
R18	192668		RES CCF 1/8W 5% 10R
R19	156316		RES CCF 1/8W 5% 3.3K
R51	183140		* RES MF 1W 5% 1R
R53	174348		RES CCF 1/8W 5% 1K
R54	174348		RES CCF 1/8W 5% 1K
R55	158351		RES CCF 1/8W 5% 100K
R57	174350		RES CCF 1/8W 5% 4.7K
R58	155260		RES CCF 1/8W 5% 47K
R62	192597		RES CCF 1/8W 5% 3.3K
R63	158367		RES CCF 1/8W 5% 22K
R64	229516		RES CF 1/10W 1% 680K
R65	223961		RES CCF 1/10W 1% 130K
R66	174350		RES CCF 1/8W 5% 4.7K
R67	192670		RES CCF 1/8W 5% 100R
R68	158428		RES CCF 1/8W 5% 100R
R69	155498		RES CCF 1/8W 5% 680R
R70	174350		RES CCF 1/8W 5% 4.7K
R71	155160		RES CCF 1/8W 5% 470R
R72	155160		RES CCF 1/8W 5% 470R
R73	159029		RES CCF 1/8W 5% 120R
R74	159061		RES CCF 1/8W 5% 68R
R75	204320		RES CCF 1/10W 1% 15K
R76	184027		RES CCF 1/10W 5% 330K
R77	192673		RES CCF 1/8W 5% 2.7K
R78	155260		RES CCF 1/8W 5% 47K
R79	229517		RES MF 1/10W 1% 2.4K
R80	204320		RES CCF 1/10W 1% 15K
R81	203479		RES CCF 1/10W 1% 5.6
R82	219939		RES CCF 1/10W 1% 1.2K
R83	229518		RES CF 1/10W 1% 4.3K
R84	220054		RES CF 1/10W 1% 9.1K
R85	219940		RES CCF 1/10W 1% 4.7K
R88	157336		RES CF 1/8W 5% 10K
R89	224350		RES CCF 1/10W 5% 22K
R90	193649		RES CCF 1/8W 5% 680R
R91	229466		RES CCF 1/10W 1% 1.8K
R92	174365		RES CCF 1/8W 5% 12K
R93	176813		RES CCF 1/8W 5% 33K
R94	229519		RES CF 1/10W 1% 360K
R95	229520		RES MF 1/10W 1% 11K
R96	229521		RES MF 1/10W 5% 20K
R97	192673		RES CCF 1/8W 5% 2.7K
R98	204334		RES CCF 1/8W 1% 33K

REPLACEMENT PARTS (Continued)

(See Product Safety Note on first page of this parts list)

SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
R99	174350		RES CCF 1/8W 5% 4.7K
R101	193229		RES CCF 1/8W 5% 1.5K
R102	174366		RES CCF 1/8W 5% 18K
R103	174350		RES CCF 1/8W 5% 4.7K
RT51	204834		RES CONTROL
RT52	229465		RES CONTROL
T1	229472		* TRANSFORMER
ZD1	219955		DIODE
ZD53	229471		DIODE ZENER

MECHANICAL ASSEMBLY

SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
751	229615		CASE, UPPER
752	217089		SCREW
753	217086		* CABLE, POWER
754	229616		CASE, BOTTOM

SERVICING AIDS

SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
	203816		● ADAPTER, STEP UP RING (37MM TO 46MM)
	144600		● ADAPTER, TORQUE GAUGE, USE WITH/ MODEL NO. 651C-2
	144386		● ADAPTER, TORQUE GAUGE, USE W/GAUGE MODEL NO. 600ATG
	194412		● CABLE, EXT DC INPUT (PLUG ON ONE END)
	195123		● CABLE, EXT DC INPUT (PLUG ON BOTH ENDS)
	226472		● CABLE 3 PIN (COMPUTER HOOKUP)
	159271		● CHART, AUTO FOCUS
	159272		● CHART, BACK FOCUS
	153910		● CHART, COLOR BAR
	153909		● CHART, GRAY SCALE
	210775		● CIRCUIT, DSP COMPUTER SERIAL INTERFACE
	215972		● DISK, ALIGNMENT (360K) SOFTWARE 5.25 IN
	215973		● DISK, ALIGNMENT (720K) SOFTWARE 3.25 IN
	203815		● DRIVER, BACKFOCUS
	175541		● DRIVER, MODIFIED PHILLIPS 3MM X 115MM W/HANDLE
	195303		● DRIVER, SMD POTS
	203057		● FILTER, COLOR TEMPERATURE CONVERSION C12
	203817		● FIXTURE, ATF ADJ
	144396		● GAUGE, TORQUE W/ ADAPTER
	147001		● JIG, REEL TABLE HEIGHT
	156391		● METER, BACK TENSION TEST TAPE
	184949		● PLATE, HEIGHT REFERENCE
	156501		● TAPE, KIT OF 3 MONOSCOPE, COLOR BARS & MULTIBURST
	156502		● TAPE MULTIBURST/3KHZ (STEREO)
	192847		● TAPE, COLOR BARS/1KHZ (MONO)
	156504		● TAPE, MONOSCOPE/7KHZ (MONO)

SERVICING MATERIALS

SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
	147347		● GREASE, VCR MECHANISM
	182251		● KIT, HEAD CLEANING
	199076		● KIT, INCLUDES ALL LUBES & CLEANING MATERIALS
	147468		● OIL, VCR MECHANISM
	194358		● SOLDER CREAM, INCLUDES APPLICATOR W/2 TIPS
	145870		● SOLVENT, VCR MECHANISM
	194359		● TIP, USED WITH SOLDER CREAM APPLICATOR, 2/PKG
	145871		● WIPES, 5 X 8 1/2 INCH

INCLUDED ACCESSORIES

SYMBOL NO.	STOCK NO.	DRAWING NO.	DESCRIPTION
	221355		● ADAPTER, AC
	221356		● ADAPTER, AC
	EP096FS		BATTERY, 10V
			BOOK, INSTRUCTION 95-CC422-001 95-CC423-001
	221357		CABLE, AUDIO/VIDEO
	209342		CABLE, DC
	227327		STRAP, SHOULDER

T.C. Corp
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Wharton NJ 07885
www.servicemanuals.net

THOMSON CONSUMER ELECTRONICS

Color Video Camcorder
Basic Service Data

CC422
Additional Models:
CC423

RCA PROSCAN

Technical Publications
P.O. Box 1976 / Indianapolis, Indiana 46206

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T.C. Corp
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www.servicemanuals.net

*** Not Available**

SAFETY NOTICE
USE ISOLATION TRANSFORMER WHEN SERVICING

Components having special safety characteristics are identified by stars ★ on schematics and on the parts list in this Service Data and its bulletins. Before servicing this instrument, it is important that the service technician read and follow the "Safety Precautions" and "Product Safety Notices" in the Basic Service Data.

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EXPLODED VIEWS

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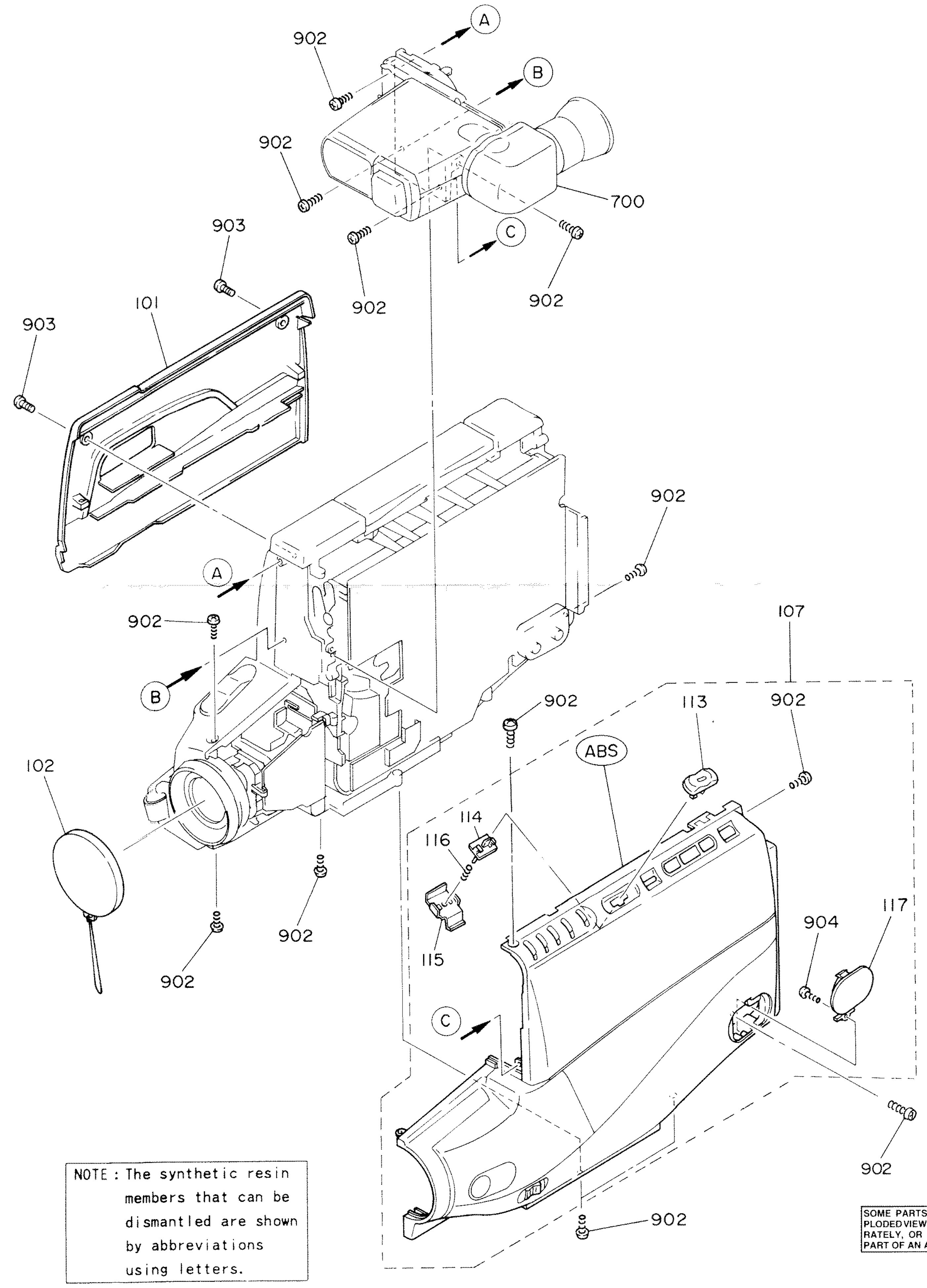
1-P2

INSTRUMENT ASSEMBLY EXPLODED VIEW (1 of 2)


902
A
B
902
700
C
902
902
903
101
903
902
A
902
B
102
902
902
107
902
902
113
ABS
114
116
115
904
117
C
902
902

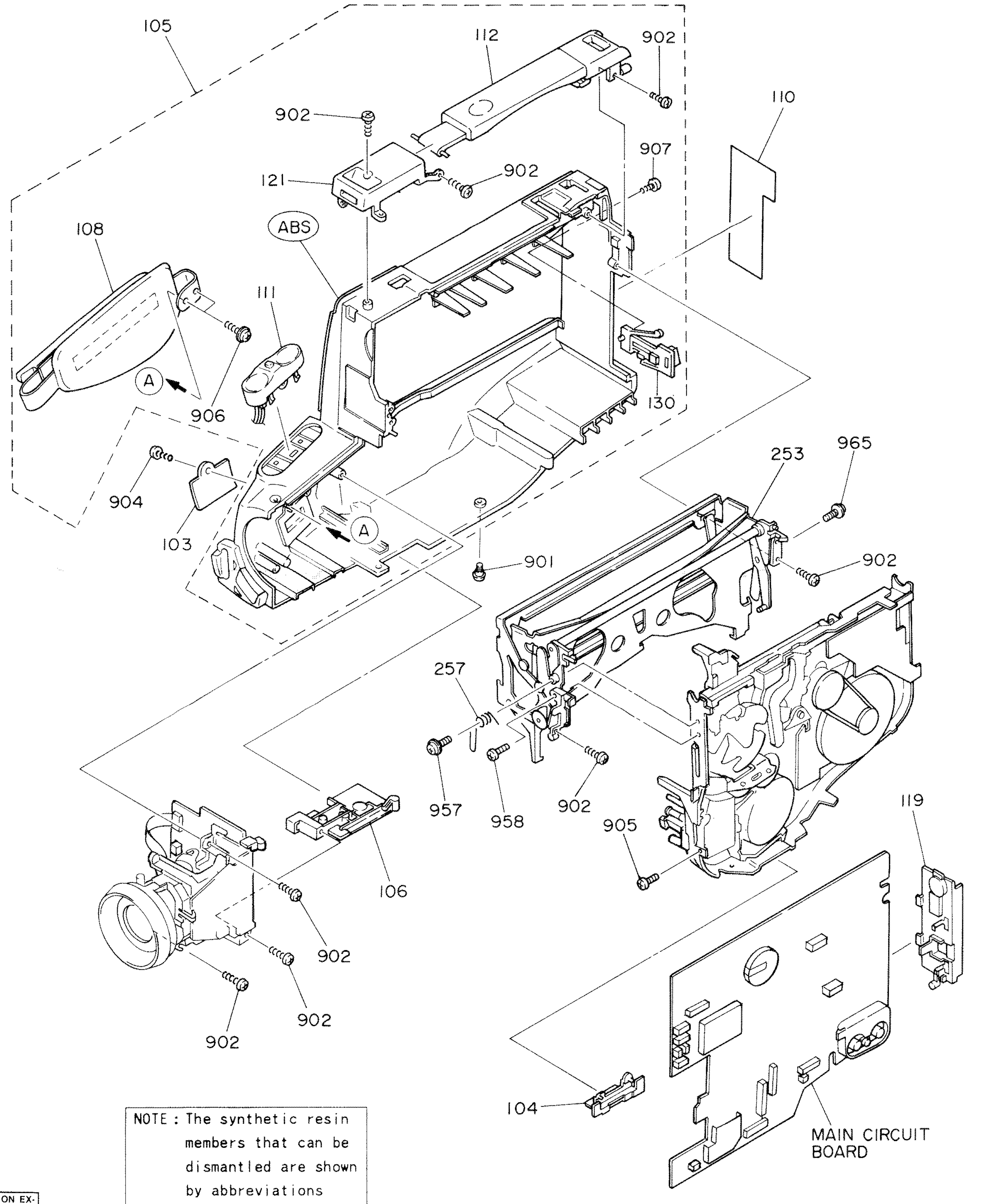
NOTE : The synthetic resin members that can be dismantled are shown by abbreviations using letters.

SOME PARTS WITH ITEM NUMBERS ON EXPLODED VIEWS MAY NOT BE AVAILABLE SEPARATELY, OR MAY BE AVAILABLE ONLY AS PART OF AN ASSEMBLY.

1-P3

1-P4

INSTRUMENT ASSEMBLY EXPLODED VIEW (2 of 2)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112
902
110
902
121
902
907
ABS
108
111
130
A
906
904
103
A
901
253
965
902
257
957
958
902
905
106
119
902
902
902
104
MAIN CIRCUIT BOARD

NOTE : The synthetic resin members that can be dismantled are shown by abbreviations using letters.

1-P5

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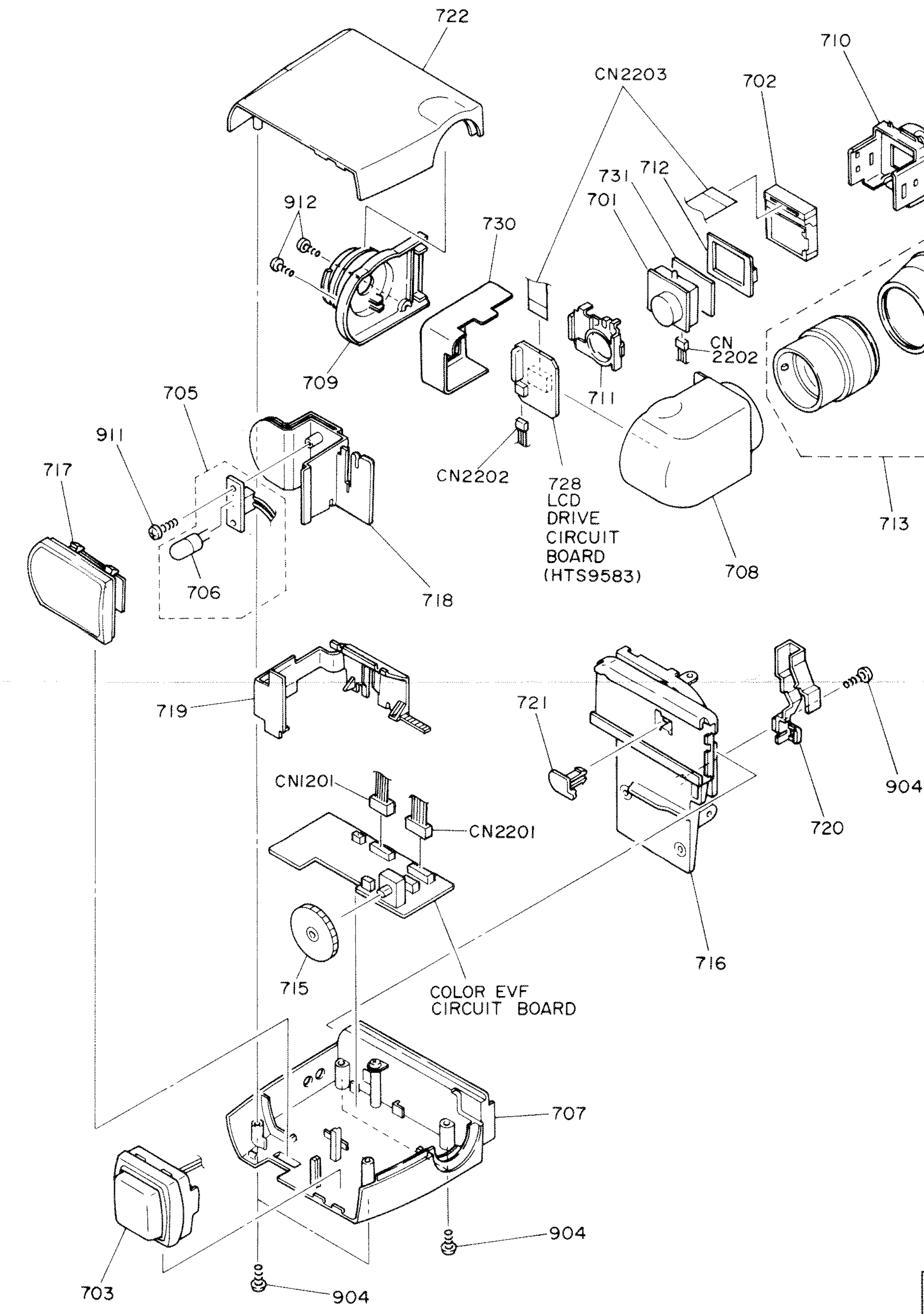
1-P7

1-P8

1-Q1

ELECTRONIC VIEWFINDER (EVF) EXPLODED VIEW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CN2203
702
710
912
730
731
712
701
CN 2202
709
711
714
705
911
717
CN2202
728 LCD DRIVE CIRCUIT BOARD (HTS9583)
708
713
706
718
719
721
904
CN1201
CN2201
720
716
715
COLOR EVF CIRCUIT BOARD
707
904
703
904

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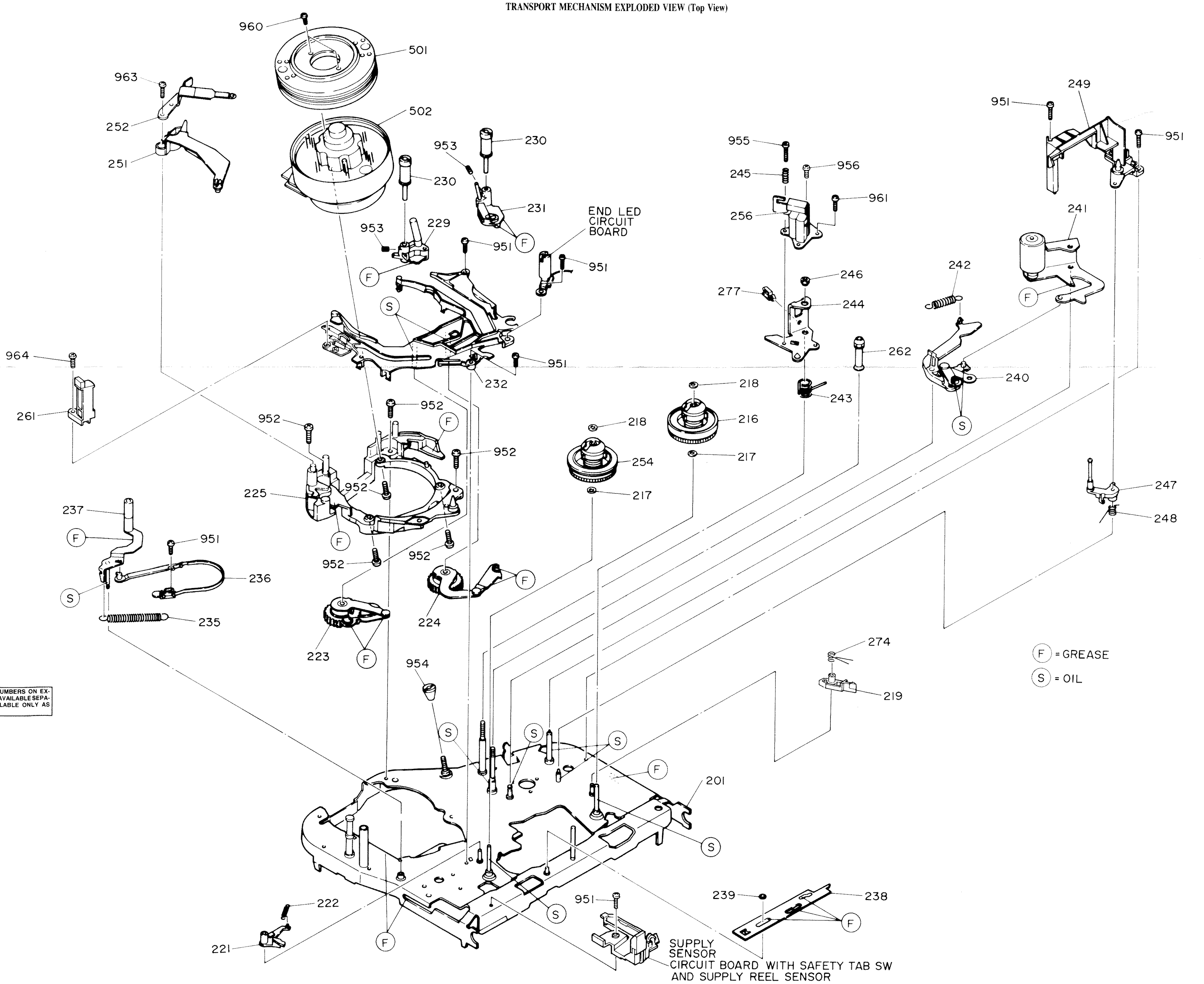
1-Q4

TRANSPORT MECHANISM EXPLODED VIEW (Top View)


960
501
963
252
502
251
953
230
230
231
953
229
951
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951
955
245
956
256
961
951
249
951
241
242
246
277
244
240
964
951
232
262
261
218
216
243
952
952
952
254
218
217
225
952
217
237
951
236
952
952
224
235
223
954
274
219
201
222
221
951
239
238
SUPPLY SENSOR CIRCUIT BOARD WITH SAFETY TAB SW AND SUPPLY REEL SENSOR
248
247
F = GREASE
S = OIL
F
S

SOME PARTS WITH ITEM NUMBERS ON EXPLODED VIEWS MAY NOT BE AVAILABLE SEPARATELY, OR MAY BE AVAILABLE ONLY AS PART OF AN ASSEMBLY.

1-Q5

1-Q6

1-Q7

1-Q8

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Wharton NJ 07885
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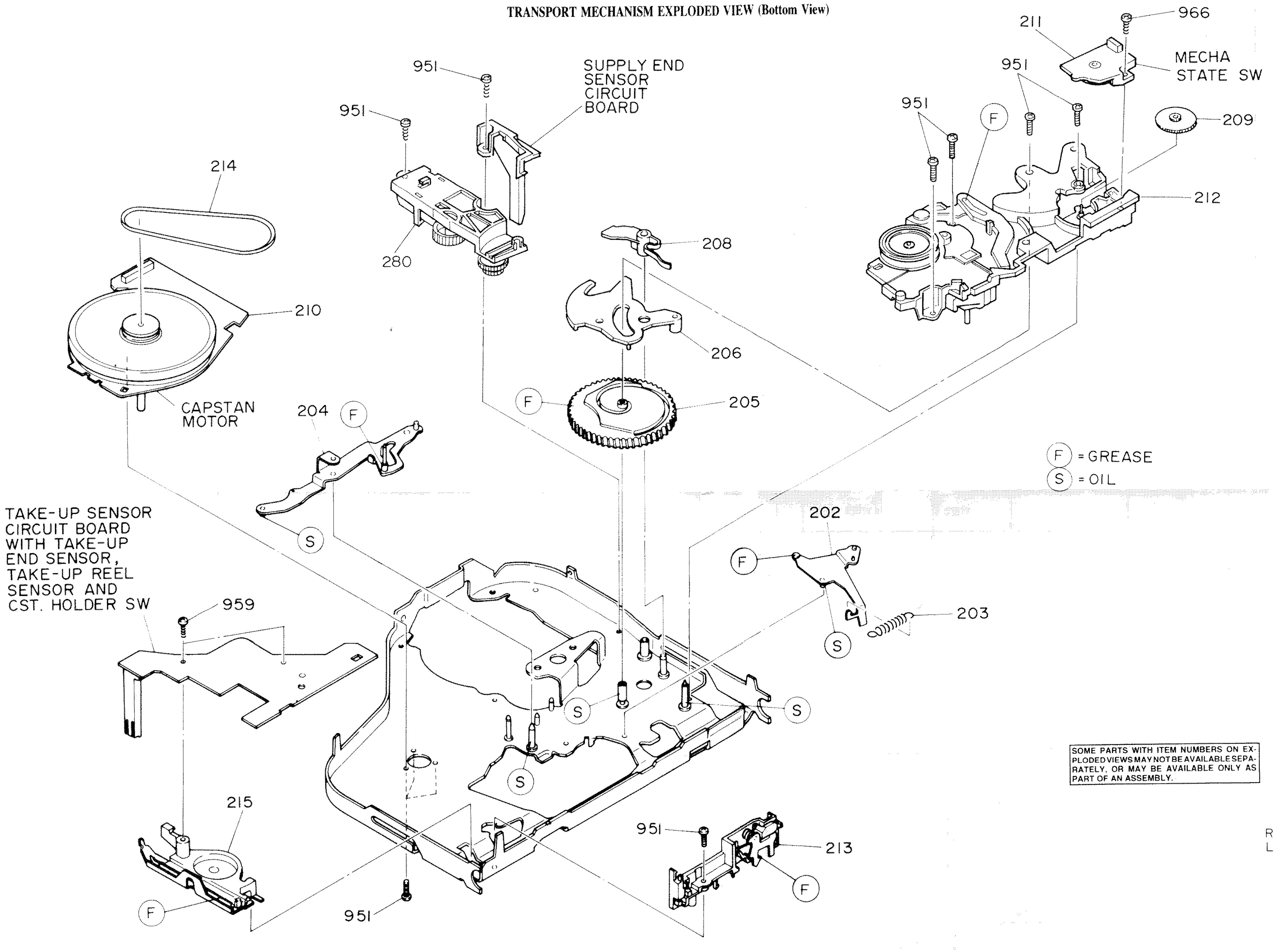
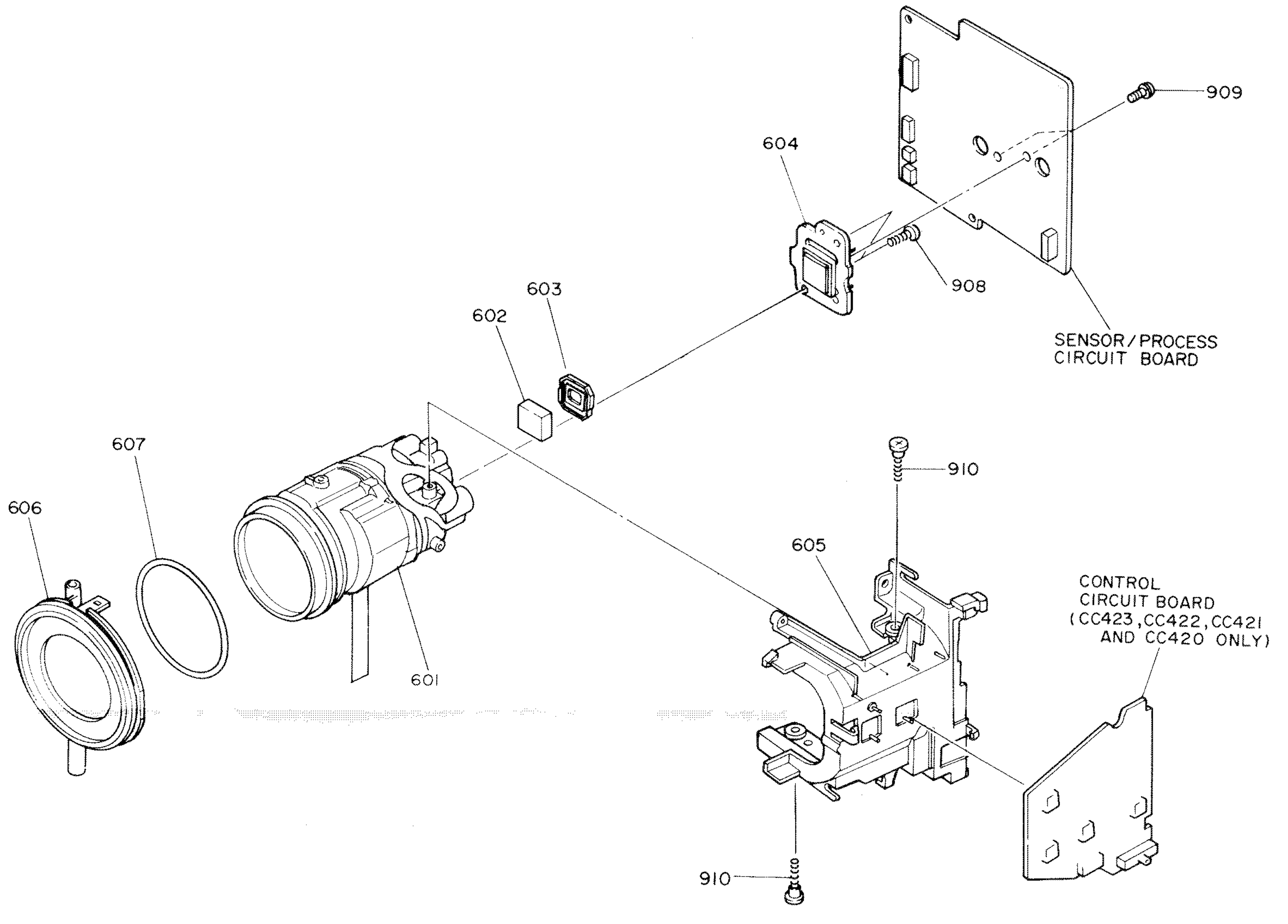
TRANSPORT MECHANISM EXPLODED VIEW (Bottom View)


966
211
MECHA STATE SW
951
SUPPLY END SENSOR CIRCUIT BOARD
951
951
951
209
214
212
280
208
210
206
F
205
CAPSTAN MOTOR
204
F
F = GREASE
S = OIL
TAKE-UP SENSOR CIRCUIT BOARD WITH TAKE-UP END SENSOR, TAKE-UP REEL SENSOR AND CST. HOLDER SW
S
202
F
203
S
959
S
S
S
215
951
213
F
F
951

CAMERA BLOCK EXPLODED VIEW

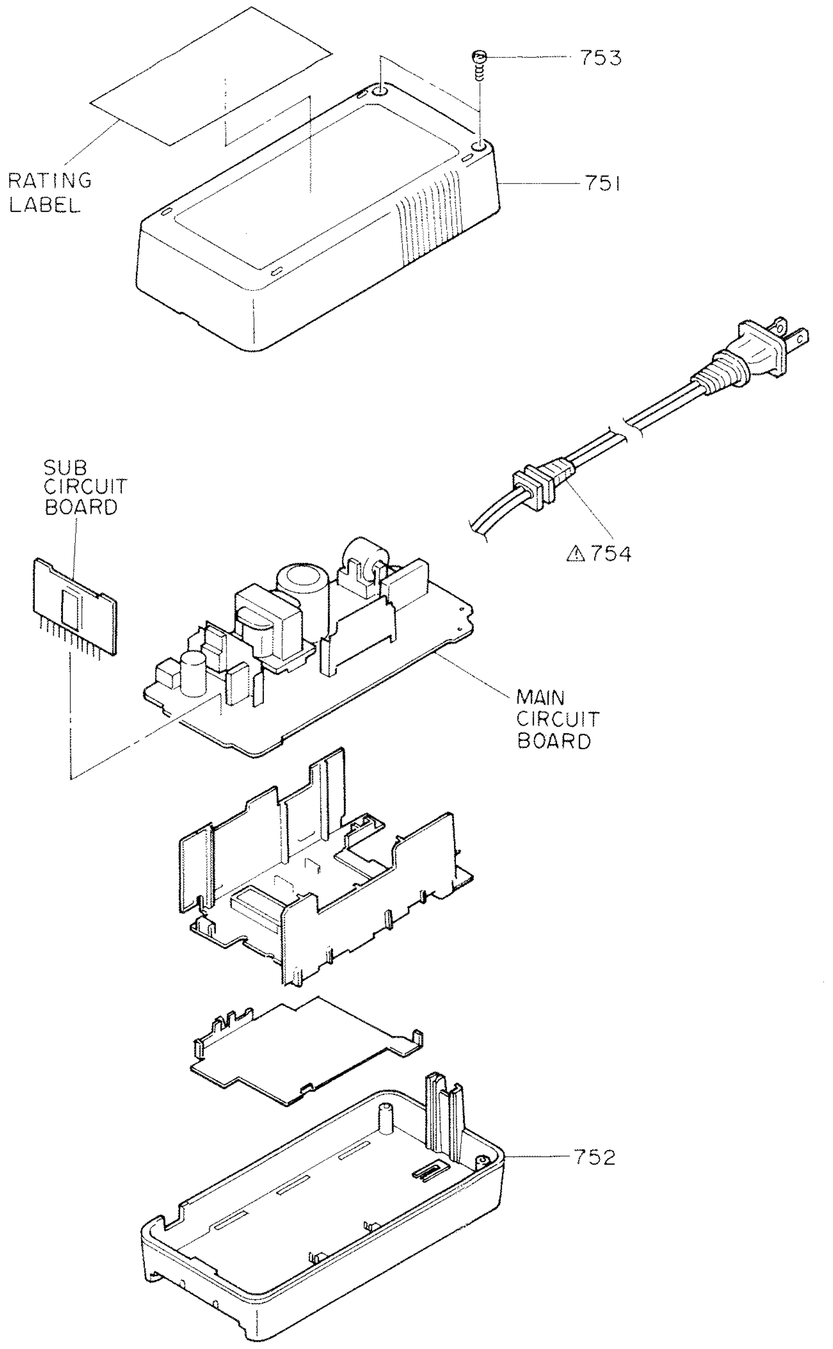

909
604
603
908
602
SENSOR/PROCESS CIRCUIT BOARD
607
910
606
605
CONTROL CIRCUIT BOARD (CC423, CC422, CC421 AND CC420 ONLY)
601
910

1-R4

1-R8

AC ADAPTER/CHARGER EXPLODED VIEW (221355)

SOME PARTS WITH ITEM NUMBERS ON EXPLODED VIEWS MAY NOT BE AVAILABLE SEPARATELY, OR MAY BE AVAILABLE ONLY AS PART OF AN ASSEMBLY.


753
RATING LABEL
751
SUB CIRCUIT BOARD
⚠754
MAIN CIRCUIT BOARD
752

BLANK

THOMSON CONSUMER ELECTRONICS

Color Video Camcorder Basic Service Data

CC422
Additional Models:
CC423

RCA PROSCAN GE

Technical Publications
P.O. Box 1976 / Indianapolis, Indiana 46206

SERVICE DATA INDEX

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Control	2-Y7	2-S5	Process	2-M1	2-R3
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Mechanism State Switch	2-X4	*	System Control	2-L1	2-P2
Preamplifier	2-T1	2-P5/Q7	Take-up Sensor	2-X8	2-S6
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Block Diagram Subindex

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Video	2-E1	2-8

* Not Available

SAFETY NOTICE
USE ISOLATION TRANSFORMER WHEN SERVICING

Components having special safety characteristics are identified by stars ★ on schematics and on the parts list in this Service Data and its bulletins. Before servicing this instrument, it is important that the service technician read and follow the "Safety Precautions" and "Product Safety Notices" in the Basic Service Data.

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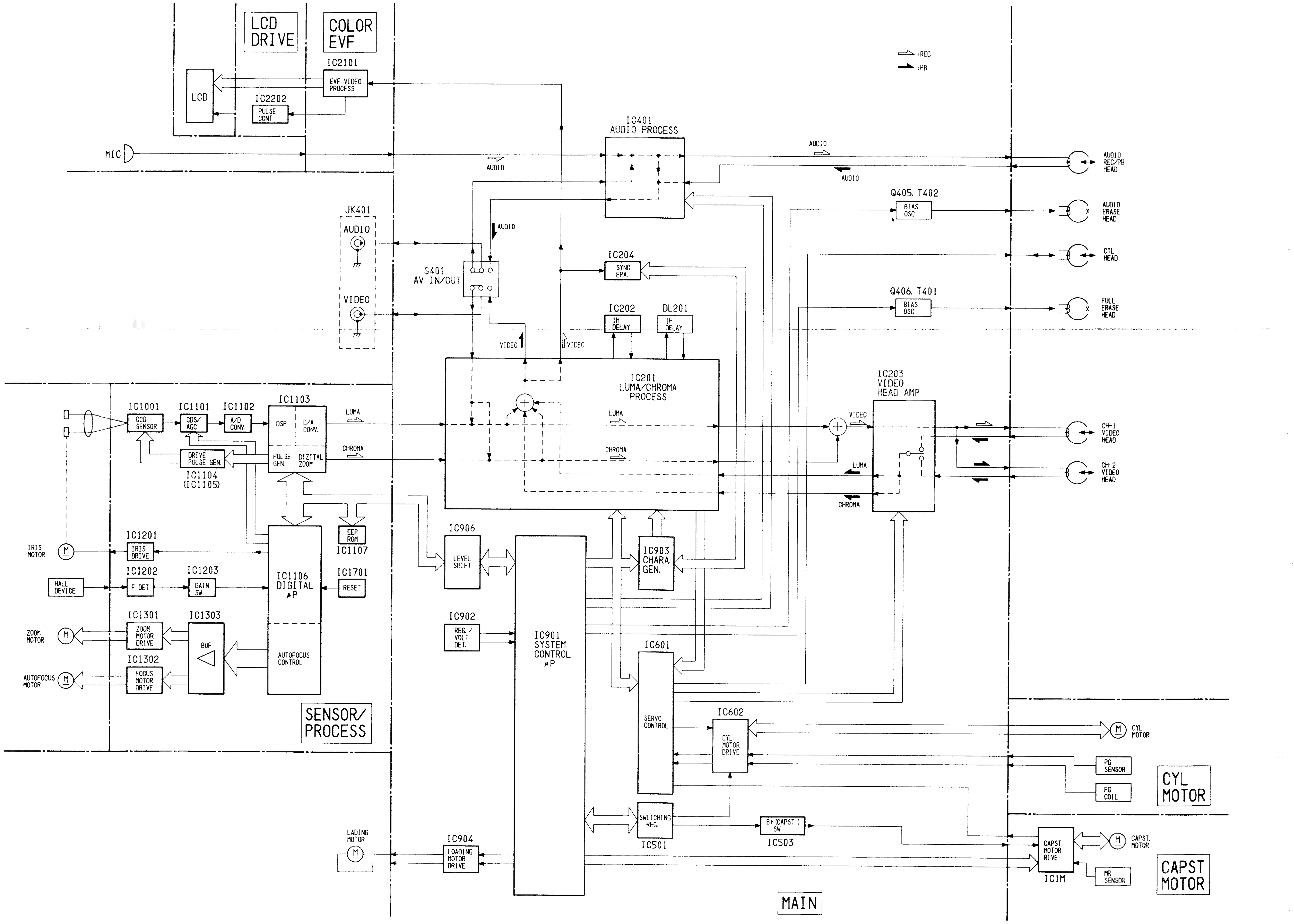
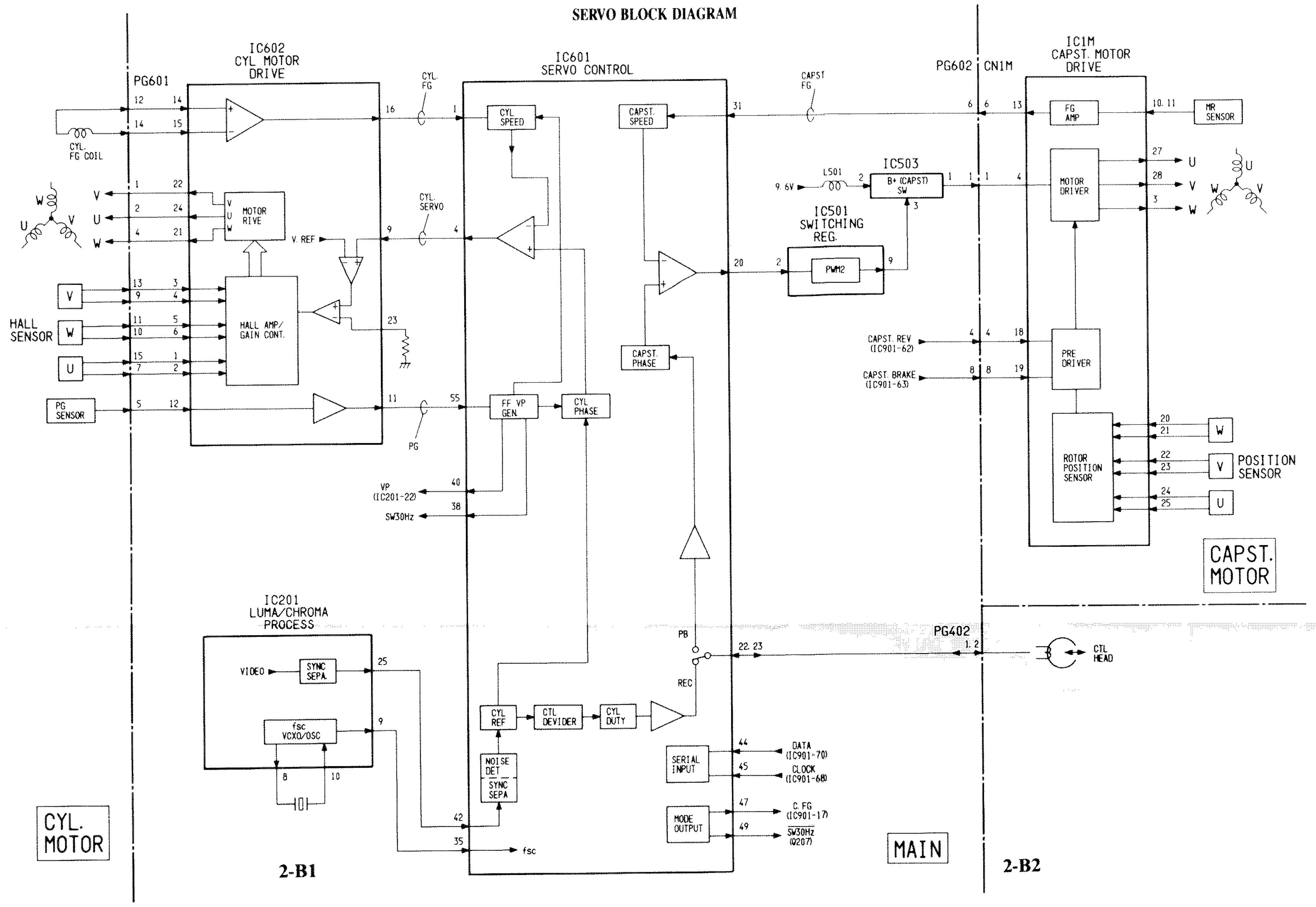
OVERALL BLOCK DIAGRAM

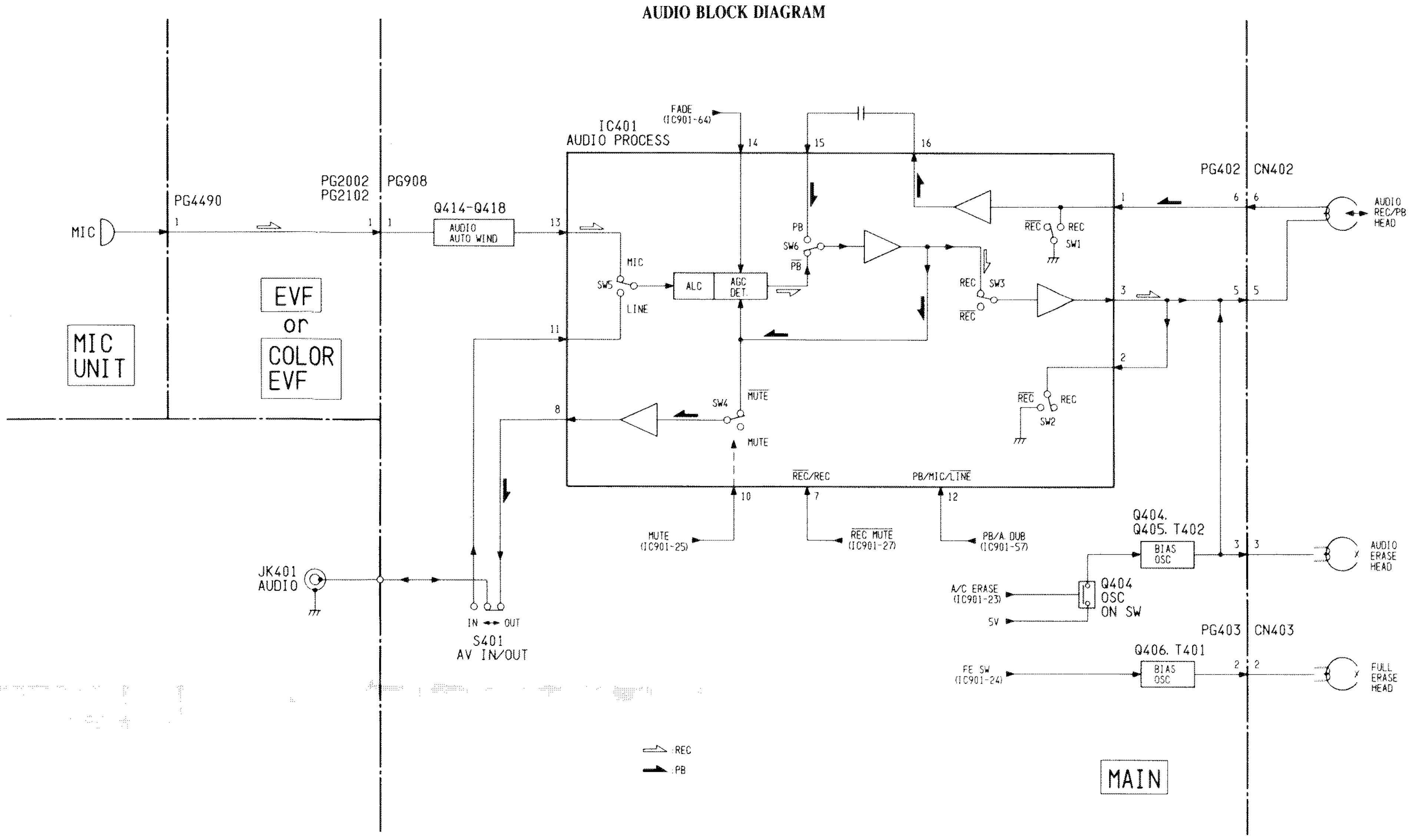

:REC
:PB
LCD DRIVE
COLOR EVF
IC2101
EVF VIDEO PROCESS
LCD
IC2202
PULSE CONT.
MIC
JK401
AUDIO
VIDEO
S401
AV IN/OUT
AUDIO
VIDEO
IC401
AUDIO PROCESS
IC204
SYNC EPA.
IC202
1H DELAY
DL201
1H DELAY
IC201
LUMA/CHROMA PROCESS
LUMA
CHROMA
Q405, T402
BIAS OSC
Q406, T401
BIAS OSC
AUDIO REC/PB HEAD
AUDIO ERASE HEAD
CTL HEAD
FULL ERASE HEAD
IC203
VIDEO HEAD AMP
CH-1 VIDEO HEAD
CH-2 VIDEO HEAD
IC1001
CCD SENSOR
IC1101
CDS/AGC
IC1102
A/D CONV.
IC1103
DSP
D/A CONV.
PULSE GEN.
DIZITAL ZOOM
DRIVE PULSE GEN.
IC1104
(IC1105)
EEP ROM
IC1107
IC1201
IRIS DRIVE
IRIS MOTOR
HALL DEVICE
IC1202
F. DET
IC1203
GAIN SW
IC1106
DIGITAL µP
IC1701
RESET
IC1301
ZOOM MOTOR DRIVE
ZOOM MOTOR
IC1303
BUF
IC1302
FOCUS MOTOR DRIVE
AUTOFOCUS MOTOR
AUTOFOCUS CONTROL
SENSOR/PROCESS
IC906
LEVEL SHIFT
IC902
REG./VOLT DET.
IC901
SYSTEM CONTROL µP
IC903
CHARA. GEN.
IC601
SERVO CONTROL
IC602
CYL. MOTOR DRIVE
SWITCHING REG.
IC501
B+ (CAPST.) SW
IC503
LADING MOTOR
IC904
LOADING MOTOR DRIVE
MAIN
CYL MOTOR
PG SENSOR
FG COIL
CYL MOTOR
CAPST. MOTOR RIVE
IC1M
CAPST. MOTOR
MR SENSOR
CAPST MOTOR

2-B1 2-B2 2-B3 2-B4

SERVO BLOCK DIAGRAM


IC602
CYL MOTOR
DRIVE
PG601
CYL FG COIL
MOTOR DRIVE
V. REF
HALL SENSOR
HALL AMP/
GAIN CONT.
PG SENSOR
PG
IC601
SERVO CONTROL
CYL FG
CYL SERVO
CYL SPEED
CYL PHASE
FF VP GEN.
CAPST. SPEED
CAPST. PHASE
VP (IC201-22)
SW30Hz
IC201
LUMA/CHROMA
PROCESS
VIDEO
SYNC SEPA
fsc VCXO/OSC
fsc
PB
REC
CYL REF
CTL DEVIDER
CYL DUTY
NOISE DET
SYNC SEPA
SERIAL INPUT
MODE OUTPUT
DATA (IC901-70)
CLOCK (IC901-68)
C.FG (IC901-17)
SW30Hz (Q207)
CAPST FG
PG602
CN1M
IC1M
CAPST. MOTOR
DRIVE
FG AMP
MR SENSOR
MOTOR DRIVER
PRE DRIVER
ROTOR POSITION SENSOR
POSITION SENSOR
CAPST REV (IC901-62)
CAPST BRAKE (IC901-63)
9.6V
L501
IC503
B+ (CAPST) SW
IC501
SWITCHING
REG.
PWM2
PG402
CTL HEAD
CYL. MOTOR
CAPST. MOTOR
MAIN
2-B1
2-B2

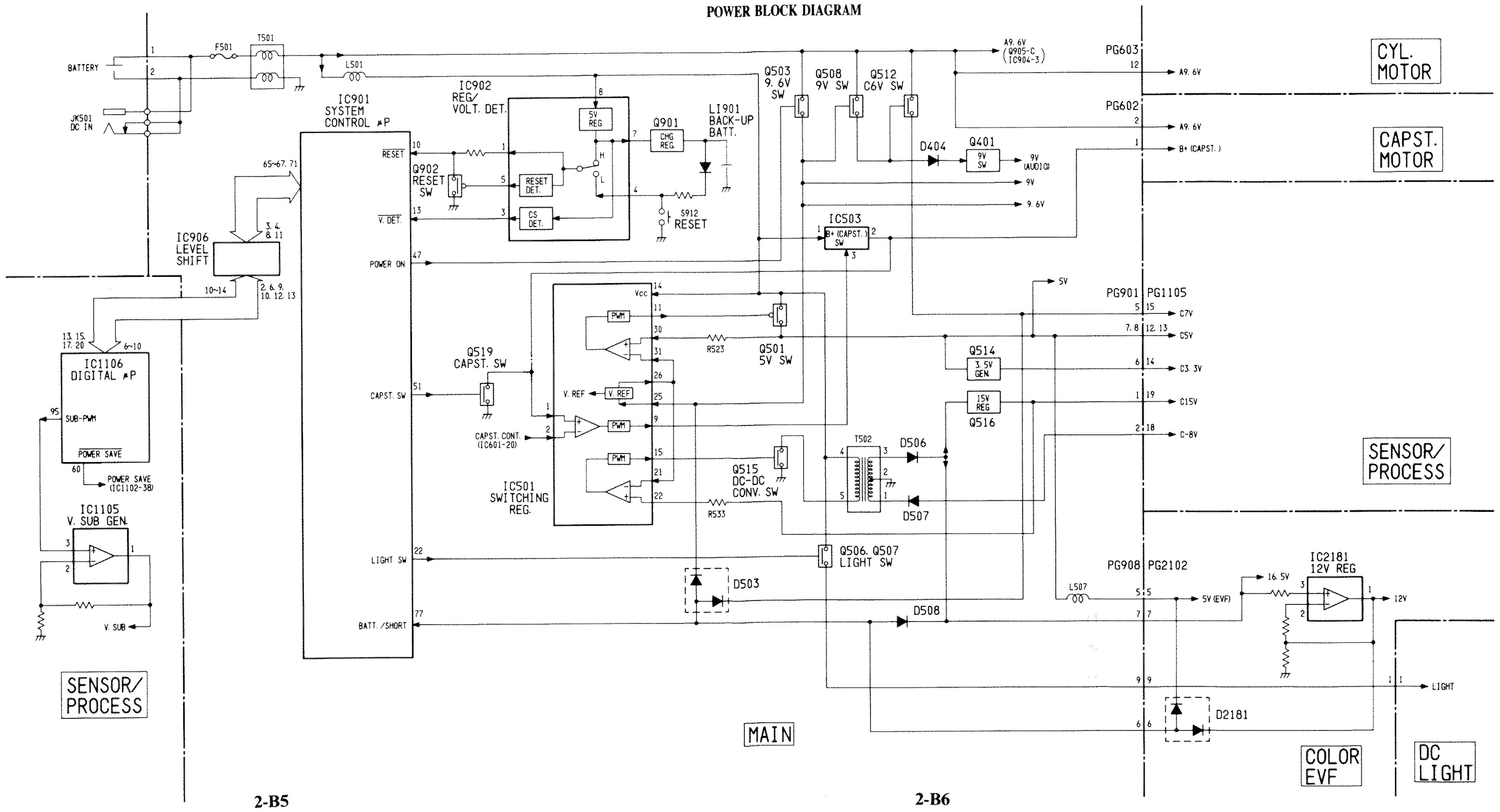
AUDIO BLOCK DIAGRAM


MIC
PG4490
MIC UNIT
EVF
or
COLOR
EVF
PG2002
PG2102
PG908
Q414-Q418
AUDIO AUTO WING
IC401
AUDIO PROCESS
FADE (IC901-64)
MIC
LINE
SW5
ALC
AGC DET
PB
SW6
REC
SW1
SW3
SW2
SW4
MUTE
REC/REC
PB/MIC/LINE
MUTE (IC901-25)
REC MUTE (IC901-27)
PB/A DUB (IC901-57)
JK401
AUDIO
IN
OUT
S401
AV IN/OUT
PG402
CN402
AUDIO REC/PB HEAD
Q404, Q405, T402
BIAS OSC
AUDIO ERASE HEAD
A/C ERASE (IC901-23)
Q404
OSC
ON SW
5V
PG403
CN403
Q406, T401
FE SW (IC901-24)
FULL ERASE HEAD
REC
PB
MAIN

2-B3 2-B4

2-B5 2-B6 2-B7 2-B8

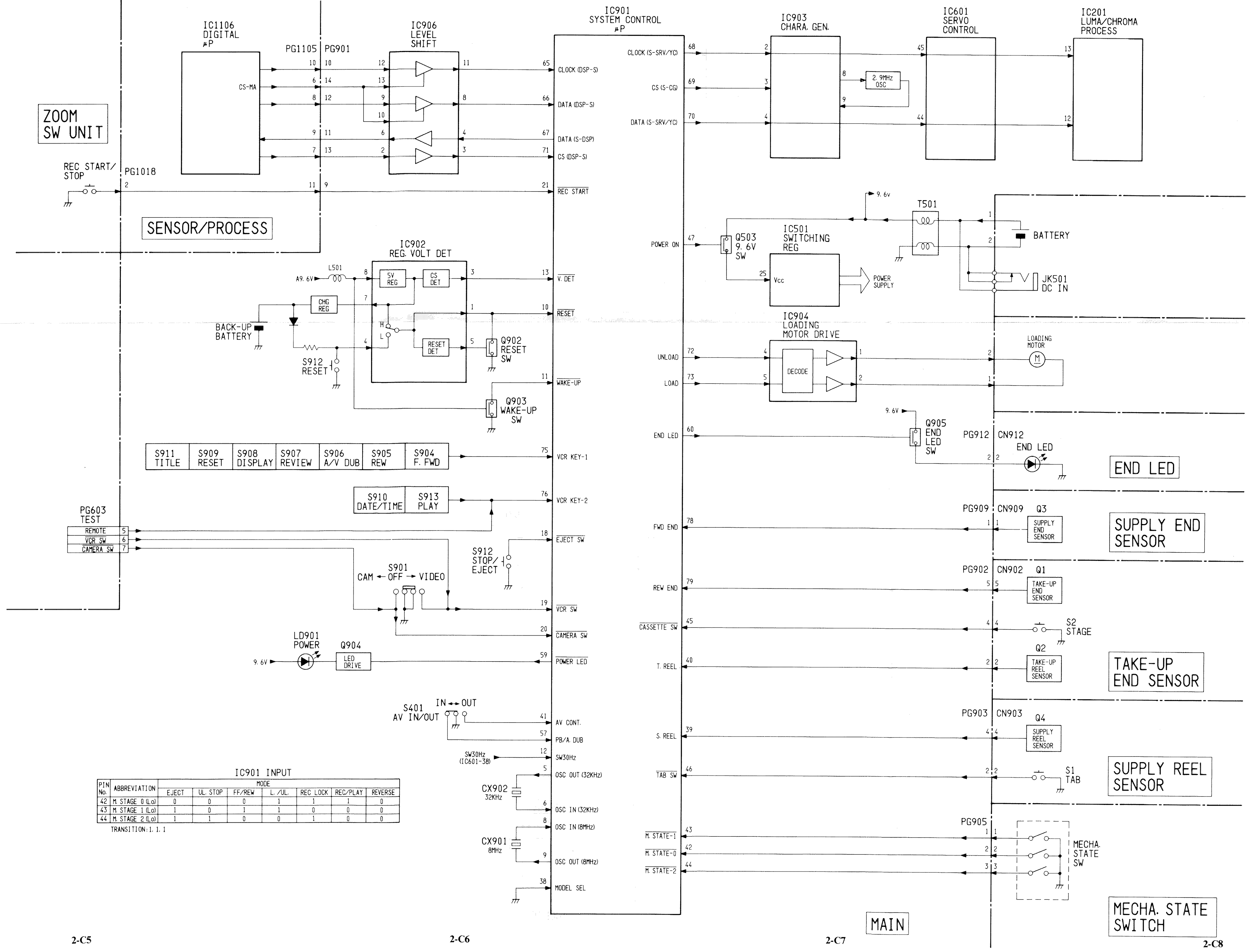
POWER BLOCK DIAGRAM


BATTERY
F501
T501
L501
JK501
DC IN
IC901
SYSTEM
CONTROL µP
RESET
V.DET
POWER ON
CAPST. SW
LIGHT SW
BATT./SHORT
IC906
LEVEL
SHIFT
IC1106
DIGITAL µP
SUB-PWM
POWER SAVE
POWER SAVE (IC1102-38)
IC1105
V. SUB GEN.
V. SUB
IC902
REG/
VOLT. DET.
5V REG
RESET DET.
CS DET.
Q902
RESET SW
Q901
CHG REG
LI901
BACK-UP
BATT.
S912
RESET
Q503
9.6V SW
Q508
9V SW
Q512
C6V SW
D404
Q401
9V SW
9V (AUDIO)
9V
9.6V
A9.6V (Q905-C, IC904-5)
IC503
B+ (CAPST.) SW
5V
Q519
CAPST. SW
CAPST. CONT (IC601-20)
IC501
SWITCHING
REG.
Vcc
PWM
V. REF
R523
Q501
5V SW
Q515
DC-DC
CONV. SW
R533
T502
D506
D507
Q514
3.5V GEN.
15V REG
Q516
Q506, Q507
LIGHT SW
D503
D508
L507
PG603
A9.6V
PG602
B+ (CAPST.)
PG901
PG1105
C7V
C5V
D3.3V
C15V
C-8V
PG908
PG2102
5V (EVF)
IC2181
12V REG
16.5V
12V
LIGHT
D2181
SENSOR/PROCESS
CYL. MOTOR
CAPST. MOTOR
SENSOR/PROCESS
COLOR EVF
DC LIGHT
MAIN
2-B5
2-B6

BLANK

2-B7 2-B8

SYSTEM CONTROL BLOCK DIAGRAM

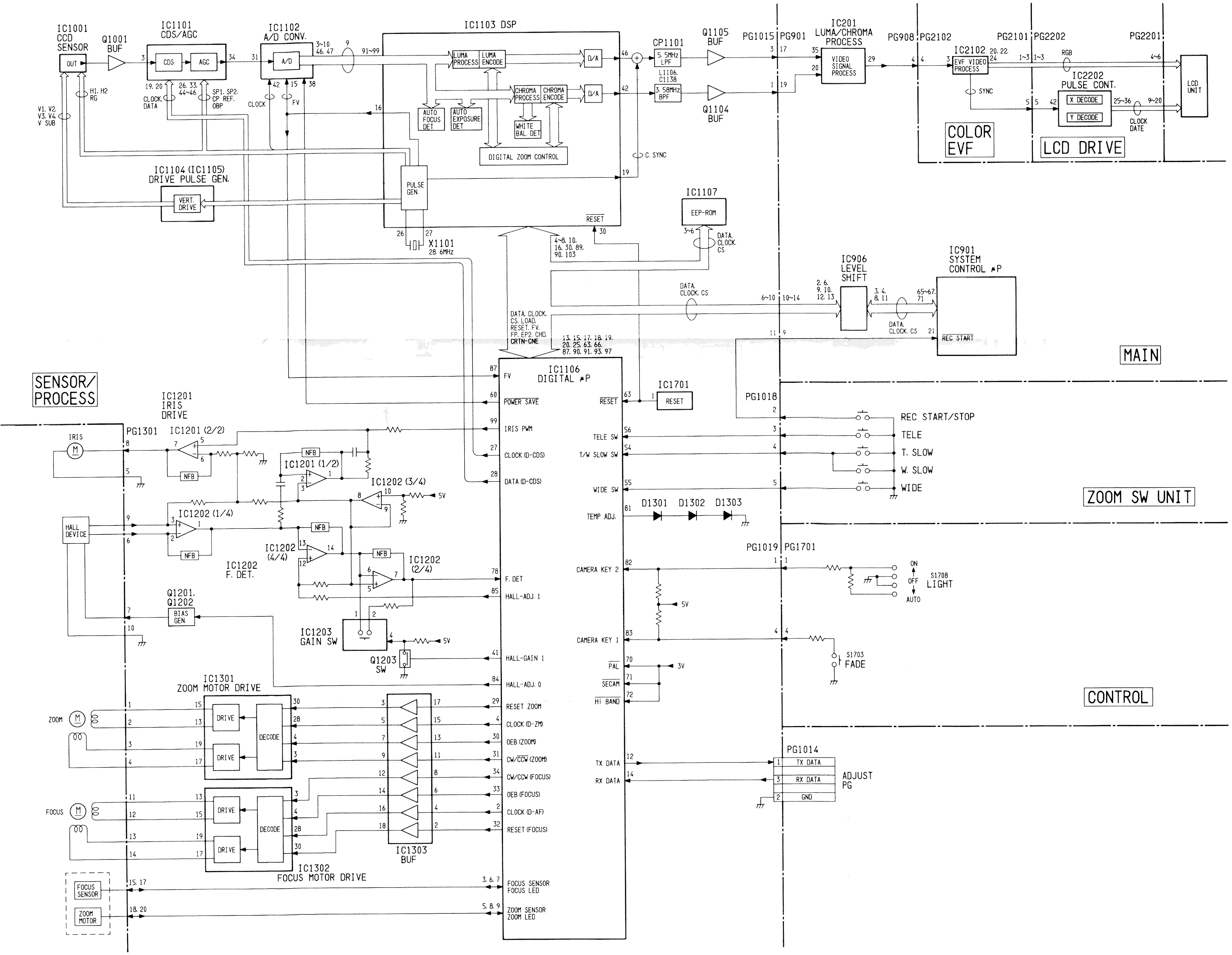

2-C1
2-C2
2-C3
2-C4
IC1106
DIGITAL
µP
CS-MA
PG1105
PG901
IC906
LEVEL
SHIFT
IC901
SYSTEM CONTROL
µP
CLOCK (DSP-S)
DATA (DSP-S)
DATA (S-DSP)
CS (DSP-S)
REC START
CLOCK (S-SRV/YC)
CS (S-CG)
DATA (S-SRV/YC)
IC903
CHARA. GEN.
2. 9MHz
OSC
IC601
SERVO
CONTROL
IC201
LUMA/CHROMA
PROCESS
ZOOM
SW UNIT
REC START/
STOP
PG1018
SENSOR/PROCESS
IC902
REG. VOLT DET
A9. 6V
L501
5V
REG
CS
DET
CHG
REG
BACK-UP
BATTERY
H
L
RESET
DET
S912
RESET
Q902
RESET
SW
Q903
WAKE-UP
SW
V. DET
RESET
WAKE-UP
POWER ON
Q503
9. 6V
SW
IC501
SWITCHING
REG
Vcc
POWER
SUPPLY
9. 6v
T501
BATTERY
JK501
DC IN
IC904
LOADING
MOTOR DRIVE
DECODE
UNLOAD
LOAD
LOADING
MOTOR
M
9. 6V
Q905
END
LED
SW
END LED
PG912
CN912
END LED
END LED
S911
TITLE
S909
RESET
S908
DISPLAY
S907
REVIEW
S906
A/V DUB
S905
REW
S904
F. FWD
VCR KEY-1
S910
DATE/TIME
S913
PLAY
VCR KEY-2
PG603
TEST
REMOTE
VCR SW
CAMERA SW
S912
STOP/
EJECT
EJECT SW
S901
CAM ← OFF → VIDEO
VCR SW
CAMERA SW
LD901
POWER
Q904
LED
DRIVE
9. 6V
POWER LED
S401
AV IN/OUT
IN ↔ OUT
AV CONT.
PB/A. DUB
SW30Hz
(IC601-38)
SW30Hz
CX902
32KHz
OSC OUT (32KHz)
OSC IN (32KHz)
CX901
8MHz
OSC IN (8MHz)
OSC OUT (8MHz)
MODEL SEL
FWD END
PG909
CN909
Q3
SUPPLY
END
SENSOR
SUPPLY END
SENSOR
REW END
PG902
CN902
Q1
TAKE-UP
END
SENSOR
CASSETTE SW
S2
STAGE
T. REEL
Q2
TAKE-UP
REEL
SENSOR
TAKE-UP
END SENSOR
S. REEL
PG903
CN903
Q4
SUPPLY
REEL
SENSOR
TAB SW
S1
TAB
SUPPLY REEL
SENSOR
PG905
M. STATE-1
M. STATE-0
M. STATE-2
MECHA.
STATE
SW
MECHA. STATE
SWITCH
MAIN
2-C5
2-C6
2-C7
2-C8

IC901 INPUT

PIN No.	ABBREVIATION	MODE						
		EJECT	UL. STOP	FF/REW	L. /UL.	REC LOCK	REC/PLAY	REVERSE
42	M. STAGE 0 (Lo)	0	0	0	1	1	1	0
43	M. STAGE 1 (Lo)	1	0	1	1	0	0	0
44	M. STAGE 2 (Lo)	1	1	0	0	1	0	0

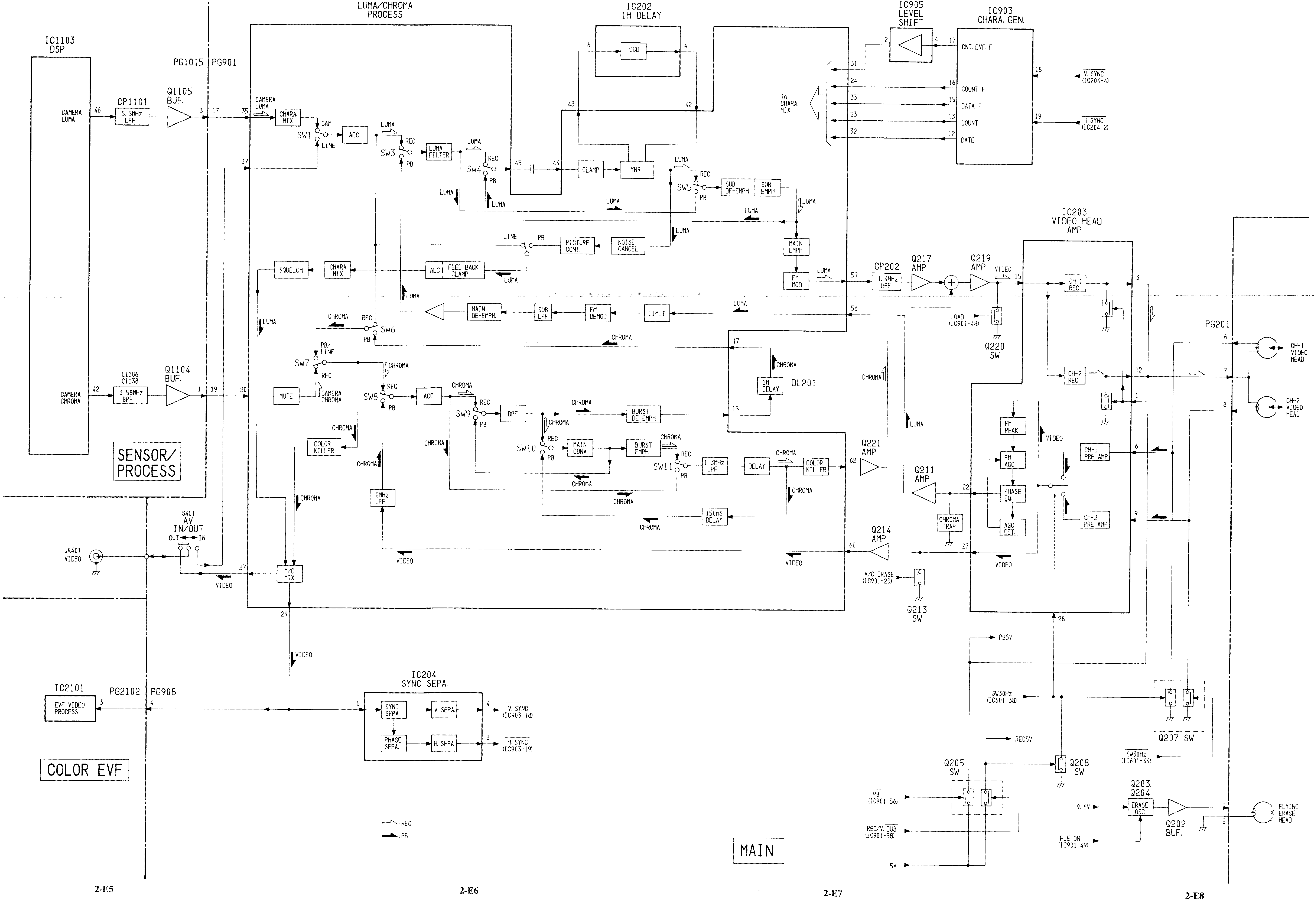
TRANSITION: 1. 1. 1

CAMERA BLOCK DIAGRAM


IC1001
CCD
SENSOR
OUT
Q1001
BUF
IC1101
CDS/AGC
CDS
AGC
IC1102
A/D CONV.
A/D
IC1103 DSP
LUMA PROCESS
LUMA ENCODE
CHROMA PROCESS
CHROMA ENCODE
D/A
AUTO FOCUS DET
AUTO EXPOSURE DET
WHITE BAL DET
DIGITAL ZOOM CONTROL
PULSE GEN.
RESET
X1101
28.6MHz
H1, H2
RG
V1, V2,
V3, V4,
V SUB
CLOCK,
DATA
SP1, SP2,
CP REF,
OBP
CLOCK
FV
IC1104 (IC1105)
DRIVE PULSE GEN.
VERT. DRIVE
CP1101
5.5MHz LPF
L1106, C1138
3.58MHz BPF
Q1105
BUF
Q1104
BUF
C. SYNC
IC1107
EEP-ROM
DATA,
CLOCK,
CS
PG1015
PG901
IC201
LUMA/CHROMA
PROCESS
VIDEO SIGNAL PROCESS
PG908
PG2102
IC2102
EVF VIDEO PROCESS
SYNC
PG2101
PG2202
RGB
IC2202
PULSE CONT.
X DECODE
Y DECODE
CLOCK
DATE
PG2201
LCD UNIT
COLOR EVF
LCD DRIVE
IC906
LEVEL
SHIFT
IC901
SYSTEM
CONTROL µP
REC START
MAIN
DATA, CLOCK, CS
DATA, CLOCK, CS, LOAD, RESET, FV, FP, FP2, CHD, CRTN-CNE
IC1106
DIGITAL µP
FV
POWER SAVE
IRIS PWM
CLOCK (D-CDS)
DATA (D-CDS)
F. DET
HALL-ADJ. 1
HALL-GAIN 1
HALL-ADJ. 0
RESET ZOOM
CLOCK (D-ZM)
OEB (ZOOM)
CW/CCW (ZOOM)
CW/CCW (FOCUS)
OEB (FOCUS)
CLOCK (D-AF)
RESET (FOCUS)
FOCUS SENSOR
FOCUS LED
ZOOM SENSOR
ZOOM LED
RESET
TELE SW
T/W SLOW SW
WIDE SW
TEMP ADJ.
CAMERA KEY 2
CAMERA KEY 1
PAL
SECAM
HI BAND
TX DATA
RX DATA
IC1701
RESET
PG1018
REC START/STOP
TELE
T. SLOW
W. SLOW
WIDE
ZOOM SW UNIT
D1301
D1302
D1303
PG1019
PG1701
ON
OFF
AUTO
S1708
LIGHT
S1703
FADE
5V
3V
CONTROL
PG1014
TX DATA
RX DATA
GND
ADJUST PG
SENSOR/
PROCESS
IC1201
IRIS
DRIVE
PG1301
IRIS
IC1201 (2/2)
NFB
IC1201 (1/2)
IC1202 (3/4)
IC1202 (1/4)
HALL DEVICE
IC1202 (4/4)
IC1202
F. DET.
IC1202 (2/4)
Q1201,
Q1202
BIAS GEN.
IC1203
GAIN SW
Q1203
SW
IC1301
ZOOM MOTOR DRIVE
ZOOM
DRIVE
DECODE
FOCUS
IC1302
FOCUS MOTOR DRIVE
IC1303
BUF
FOCUS SENSOR
ZOOM MOTOR

2-D1 2-D5 2-D4 2-D8

VIDEO BLOCK DIAGRAM


2-E1
2-E2
2-E3
2-E4
IC1103
DSP
CAMERA LUMA
CAMERA CHROMA
CP1101
5.5MHz LPF
Q1105
BUF.
L1106, C1138
3.58MHz BPF
Q1104
BUF.
SENSOR/ PROCESS
PG1015
PG901
IC201
LUMA/CHROMA PROCESS
CHARA. MIX
SW1
CAM
LINE
AGC
SW3
LUMA FILTER
SW4
REC
PB
LUMA
CHROMA
VIDEO
LINE
PICTURE CONT.
NOISE CANCEL
SQUELCH
CHARA. MIX
ALC
FEED BACK CLAMP
MAIN DE-EMPH.
SUB LPF
FM DEMOD
LIMIT
SW6
SW7
PB/ LINE
CAMERA CHROMA
SW8
ACC
SW9
BPF
BURST DE-EMPH.
SW10
MAIN CONV.
BURST EMPH.
SW11
1.3MHz LPF
DELAY
COLOR KILLER
150nS DELAY
MUTE
COLOR KILLER
2MHz LPF
Y/C MIX
IC202
1H DELAY
CCD
CLAMP
YNR
SW5
SUB DE-EMPH.
SUB EMPH.
MAIN EMPH.
FM MOD
1H DELAY
DL201
IC905
LEVEL SHIFT
IC903
CHARA. GEN.
CNT. EVF. F
COUNT. F
DATA F
COUNT
DATE
To CHARA MIX
V. SYNC (IC204-4)
H. SYNC (IC204-2)
CP202
1.4MHz HPF
Q217
AMP
Q219
AMP
LOAD (IC901-48)
Q220
SW
IC203
VIDEO HEAD AMP
CH-1 REC
CH-2 REC
FM PEAK
FM AGC
PHASE EQ.
AGC DET.
CH-1 PRE AMP
CH-2 PRE AMP
Q221
AMP
Q211
AMP
CHROMA TRAP
Q214
AMP
A/C ERASE (IC901-23)
Q213
SW
PG201
CH-1 VIDEO HEAD
CH-2 VIDEO HEAD
PB5V
SW30Hz (IC601-38)
REC5V
Q207 SW
SW30Hz (IC601-49)
Q208
SW
Q205
SW
PB (IC901-56)
REC/V. DUB (IC901-58)
5V
Q203, Q204
9.6V
ERASE OSC
Q202
BUF.
FLE ON (IC901-49)
FLYING ERASE HEAD
JK401
VIDEO
S401
AV IN/OUT
OUT
IN
IC204
SYNC SEPA.
SYNC SEPA.
V. SEPA.
PHASE SEPA.
H. SEPA.
V. SYNC (IC903-18)
H. SYNC (IC903-19)
IC2101
EVF VIDEO PROCESS
PG2102
PG908
COLOR EVF
: REC
: PB
MAIN
2-E5
2-E6
2-E7
2-E8

T.C. Corp
10 North Main St
Wharton NJ 07885
www.servicemanuals.net

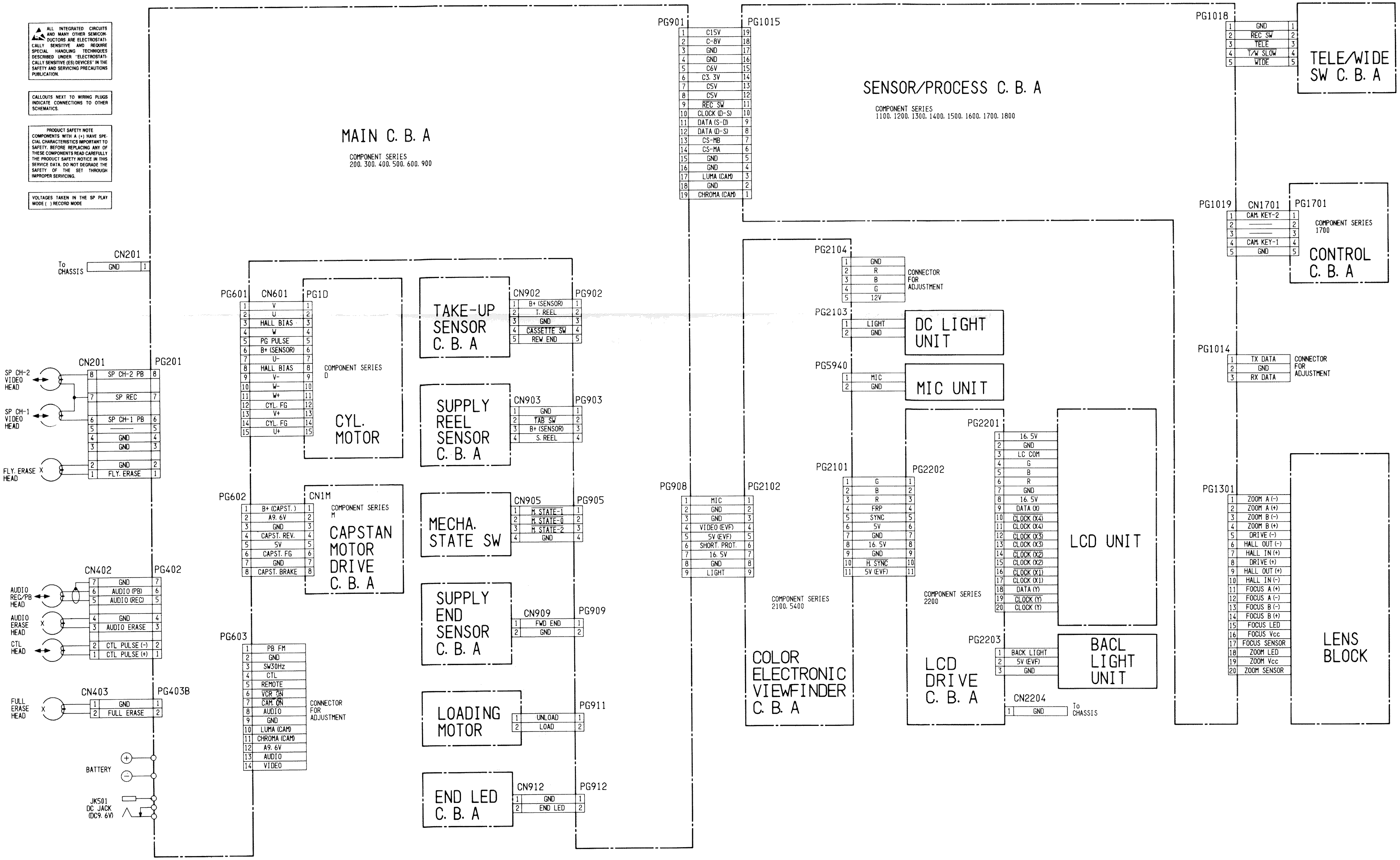
INTERCONNECT WIRING DIAGRAM

ALL INTEGRATED CIRCUITS AND MANY OTHER SEMICONDUCTORS ARE ELECTROSTATICALLY SENSITIVE AND REQUIRE SPECIAL HANDLING TECHNIQUES DESCRIBED UNDER "ELECTROSTATICALLY SENSITIVE (ES) DEVICES" IN THE SAFETY AND SERVICING PRECAUTIONS PUBLICATION.

CALLOUTS NEXT TO WIRING PLUGS INDICATE CONNECTIONS TO OTHER SCHEMATICS.

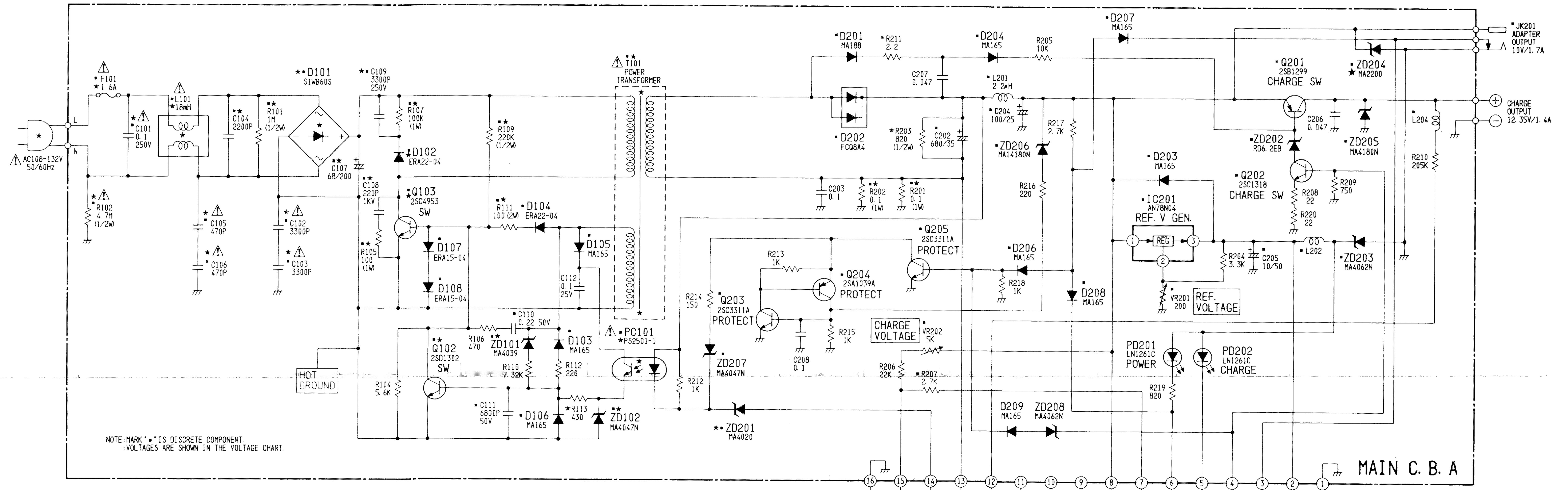
PRODUCT SAFETY NOTE
COMPONENTS WITH A (*) HAVE SPECIAL CHARACTERISTICS IMPORTANT TO SAFETY. BEFORE REPLACING ANY OF THESE COMPONENTS READ CAREFULLY THE PRODUCT SAFETY NOTICE IN THIS SERVICE DATA. DO NOT DEGRADE THE SAFETY OF THE SET THROUGH IMPROPER SERVICING.

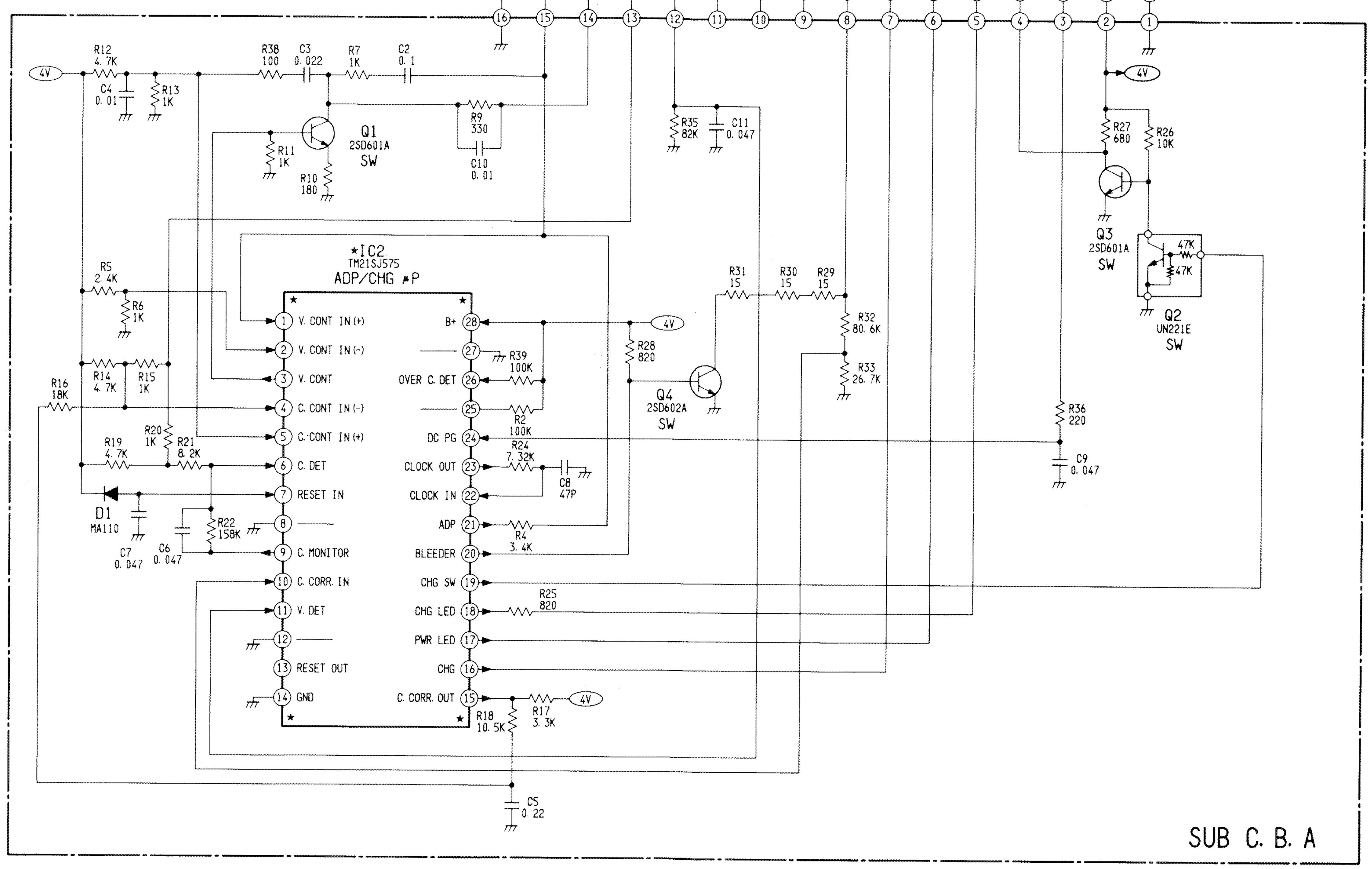
VOLTAGES TAKEN IN THE SP PLAY MODE ( ) RECORD MODE


MAIN C. B. A
COMPONENT SERIES
200, 300, 400, 500, 600, 900
CN201
To CHASSIS
GND 1
CN201
PG201
SP CH-2 VIDEO HEAD
SP CH-1 VIDEO HEAD
FLY. ERASE HEAD
8 SP CH-2 PB 8
7 SP REC 7
6 SP CH-1 PB 6
5 ——— 5
4 GND 4
3 GND 3
2 GND 2
1 FLY. ERASE 1
CN402
PG402
AUDIO REC/PB HEAD
AUDIO ERASE HEAD
CTL HEAD
7 GND 7
6 AUDIO (PB) 6
5 AUDIO (REC) 5
4 GND 4
3 AUDIO ERASE 3
2 CTL PULSE (-) 2
1 CTL PULSE (+) 1
CN403
PG403B
FULL ERASE HEAD
1 GND 1
2 FULL ERASE 2
BATTERY
JK501 DC JACK (DC9. 6V)
PG601
CN601
PG1D
1 V
2 U
3 HALL BIAS
4 W
5 PG PULSE
6 B+ (SENSOR)
7 U-
8 HALL BIAS
9 V-
10 W-
11 W+
12 CYL. FG
13 V+
14 CYL. FG
15 U+
COMPONENT SERIES
D
CYL. MOTOR
PG602
CN1M
1 B+ (CAPST.)
2 A9. 6V
3 GND
4 CAPST. REV.
5 5V
6 CAPST. FG
7 GND
8 CAPST. BRAKE
COMPONENT SERIES
M
CAPSTAN MOTOR DRIVE C. B. A
PG603
1 PB FM
2 GND
3 SW30Hz
4 CTL
5 REMOTE
6 VCR ON
7 CAM. ON
8 AUDIO
9 GND
10 LUMA (CAM)
11 CHROMA (CAM)
12 A9. 6V
13 AUDIO
14 VIDEO
CONNECTOR FOR ADJUSTMENT
TAKE-UP SENSOR C. B. A
CN902
PG902
1 B+ (SENSOR) 1
2 T. REEL 2
3 GND 3
4 CASSETTE SW 4
5 REW END 5
SUPPLY REEL SENSOR C. B. A
CN903
PG903
1 GND 1
2 TAB SW 2
3 B+ (SENSOR) 3
4 S. REEL 4
MECHA. STATE SW
CN905
PG905
1 M. STATE-1 1
2 M. STATE-0 2
3 M. STATE-2 3
4 GND 4
SUPPLY END SENSOR C. B. A
CN909
PG909
1 FWD END 1
2 GND 2
LOADING MOTOR
PG911
1 UNLOAD 1
2 LOAD 2
END LED C. B. A
CN912
PG912
1 GND 1
2 END LED 2
PG901
PG1015
1 C15V 19
2 C-8V 18
3 GND 17
4 GND 16
5 C6V 15
6 C3. 3V 14
7 C5V 13
8 C5V 12
9 REC SW 11
10 CLOCK (D-S) 10
11 DATA (S-D) 9
12 DATA (D-S) 8
13 CS-MB 7
14 CS-MA 6
15 GND 5
16 GND 4
17 LUMA (CAM) 3
18 GND 2
19 CHROMA (CAM) 1
SENSOR/PROCESS C. B. A
COMPONENT SERIES
1100, 1200, 1300, 1400, 1500, 1600, 1700, 1800
PG908
PG2102
1 MIC 1
2 GND 2
3 GND 3
4 VIDEO (EVF) 4
5 5V (EVF) 5
6 SHORT. PROT. 6
7 16. 5V 7
8 GND 8
9 LIGHT 9
COMPONENT SERIES
2100, 5400
COLOR ELECTRONIC VIEWFINDER C. B. A
PG2104
1 GND
2 R
3 B
4 G
5 12V
CONNECTOR FOR ADJUSTMENT
PG2103
1 LIGHT
2 GND
DC LIGHT UNIT
PG5940
1 MIC
2 GND
MIC UNIT
PG2101
PG2202
1 G 1
2 B 2
3 R 3
4 FRP 4
5 SYNC 5
6 5V 6
7 GND 7
8 16. 5V 8
9 GND 9
10 H. SYNC 10
11 5V (EVF) 11
COMPONENT SERIES
2200
LCD DRIVE C. B. A
PG2201
1 16. 5V
2 GND
3 LC COM
4 G
5 B
6 R
7 GND
8 16. 5V
9 DATA (X)
10 CLOCK (X4)
11 CLOCK (X4)
12 CLOCK (X3)
13 CLOCK (X3)
14 CLOCK (X2)
15 CLOCK (X2)
16 CLOCK (X1)
17 CLOCK (X1)
18 DATA (Y)
19 CLOCK (Y)
20 CLOCK (Y)
LCD UNIT
PG2203
1 BACK LIGHT
2 5V (EVF)
3 GND
BACL LIGHT UNIT
CN2204
1 GND
To CHASSIS
PG1018
1 GND 1
2 REC SW 2
3 TELE 3
4 T/W SLOW 4
5 WIDE 5
TELE/WIDE SW C. B. A
PG1019
CN1701
PG1701
1 CAM. KEY-2 1
2 ——— 2
3 ——— 3
4 CAM. KEY-1 4
5 GND 5
COMPONENT SERIES
1700
CONTROL C. B. A
PG1014
1 TX DATA
2 GND
3 RX DATA
CONNECTOR FOR ADJUSTMENT
PG1301
1 ZOOM A (-)
2 ZOOM A (+)
3 ZOOM B (-)
4 ZOOM B (+)
5 DRIVE (-)
6 HALL OUT (-)
7 HALL IN (+)
8 DRIVE (+)
9 HALL OUT (+)
10 HALL IN (-)
11 FOCUS A (+)
12 FOCUS A (-)
13 FOCUS B (-)
14 FOCUS B (+)
15 FOCUS LED
16 FOCUS Vcc
17 FOCUS SENSOR
18 ZOOM LED
19 ZOOM Vcc
20 ZOOM SENSOR
LENS BLOCK

2-H1 2-H2 2-H3 2-H4

AC ADAPTER/CHARGER SCHEMATIC (221355)


AC108-132V 50/60Hz
F101 1.6A
L101 18mH
C101 0.1 250V
C104 2200P
R101 1M (1/2W)
D101 S1WB60S
C109 3300P 250V
R107 100K (1W)
R109 220K (1/2W)
T101 POWER TRANSFORMER
D102 ERA22-04
C107 68/200
C108 220P 1KV
Q103 2SC4953 SW
R105 100 (1W)
D107 ERA15-04
D108 ERA15-04
R111 100 (2W)
D104 ERA22-04
D105 MA165
C112 0.1 25V
R102 4.7M (1/2W)
C105 470P
C106 470P
C102 3300P
C103 3300P
HOT GROUND
Q102 2SD1302 SW
R104 5.6K
R106 470
ZD101 MA4039
C110 0.22 50V
D103 MA165
R110 7.32K
R112 220
C111 6800P 50V
D106 MA165
R113 430
ZD102 MA4047N
PC101 PS2501-1
NOTE: MARK "▪" IS DISCRETE COMPONENT.
: VOLTAGES ARE SHOWN IN THE VOLTAGE CHART.
D201 MA188
R211 2.2
C207 0.047
D202 FCQ8A4
R203 820 (1/2W)
C202 680/35
C203 0.1
R202 0.1 (1W)
R201 0.1 (1W)
D204 MA165
R205 10K
L201 2.2μH
C204 100/25
R217 2.7K
ZD206 MA14180N
R216 220
D207 MA165
Q201 2SB1299 CHARGE SW
ZD204 MA2200
JK201 ADAPTER OUTPUT 10V/1.7A
CHARGE OUTPUT 12.35V/1.4A
C206 0.047
ZD202 RD6.2EB
ZD205 MA4180N
L204
R210 205K
D203 MA165
Q202 2SC1318 CHARGE SW
R208 22
R209 750
R220 22
IC201 AN78N04 REF. V GEN.
REG
R204 3.3K
C205 10/50
L202
ZD203 MA4062N
VR201 200
REF. VOLTAGE
Q205 2SC3311A PROTECT
R213 1K
Q204 2SA1039A PROTECT
D206 MA165
R218 1K
D208 MA165
R214 150
Q203 2SC3311A PROTECT
R215 1K
C208 0.1
CHARGE VOLTAGE
VR202 5K
ZD207 MA4047N
R212 1K
R206 22K
R207 2.7K
PD201 LN1261C POWER
PD202 LN1261C CHARGE
R219 820
D209 MA165
ZD208 MA4062N
ZD201 MA4020
MAIN C.B.A
16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1


16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1
4V
R12 4.7K
C4 0.01
R13 1K
R38 100
C3 0.022
R7 1K
C2 0.1
R9 330
C10 0.01
Q1 2SD601A SW
R11 1K
R10 180
R35 82K
C11 0.047
R27 680
R26 10K
Q3 2SD601A SW
47K
47K
Q2 UN221E SW
R5 2.4K
R6 1K
IC2 TM21SJ575 ADP/CHG μP
1 V.CONT IN(+)
2 V.CONT IN(-)
3 V.CONT
4 C.CONT IN(-)
5 C.CONT IN(+)
6 C.DET
7 RESET IN
8
9 C.MONITOR
10 C.CORR.IN
11 V.DET
12
13 RESET OUT
14 GND
B+ 28
27
OVER C.DET 26
25
DC PG 24
CLOCK OUT 23
CLOCK IN 22
ADP 21
BLEEDER 20
CHG SW 19
CHG LED 18
PWR LED 17
CHG 16
C.CORR.OUT 15
R39 100K
R2 100K
R24 7.32K
C8 47P
R4 3.4K
R25 820
R17 3.3K
R18 10.5K
R28 820
Q4 2SD602A SW
R31 15
R30 15
R29 15
R32 80.6K
R33 26.7K
R36 220
C9 0.047
R16 18K
R14 4.7K
R15 1K
R19 4.7K
R20 1K
R21 8.2K
D1 MA110
C7 0.047
C6 0.047
R22 158K
C5 0.22
SUB C.B.A

2-H1

2-H5

ALL INTEGRATED CIRCUITS AND MANY OTHER SEMICONDUCTORS ARE ELECTROSTATICALLY SENSITIVE AND REQUIRE SPECIAL HANDLING TECHNIQUES DESCRIBED UNDER "ELECTROSTATICALLY SENSITIVE (ES) DEVICES" IN THE SAFETY AND SERVICING PRECAUTIONS PUBLICATION.

CALLOUTS NEXT TO WIRING PLUGS INDICATE CONNECTIONS TO OTHER SCHEMATICS.

PRODUCT SAFETY NOTE

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VOLTAGES TAKEN IN THE SP PLAY MODE ( ) RECORD MODE

BLANK

2-H5 2-H6 2-H7 2-H8

2-11 2-12 2-13 2-14

LUMA/CHROMA SCHEMATIC

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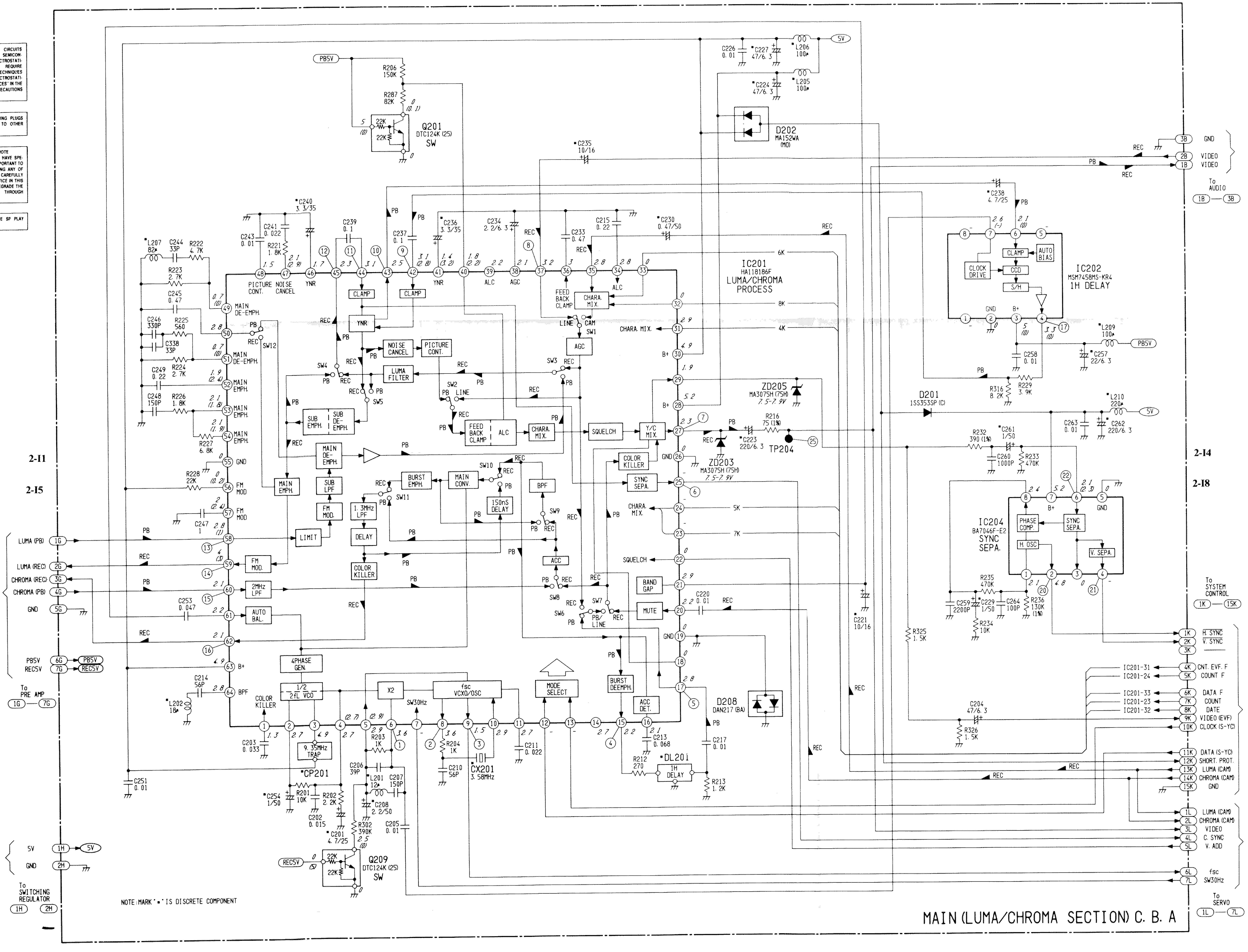
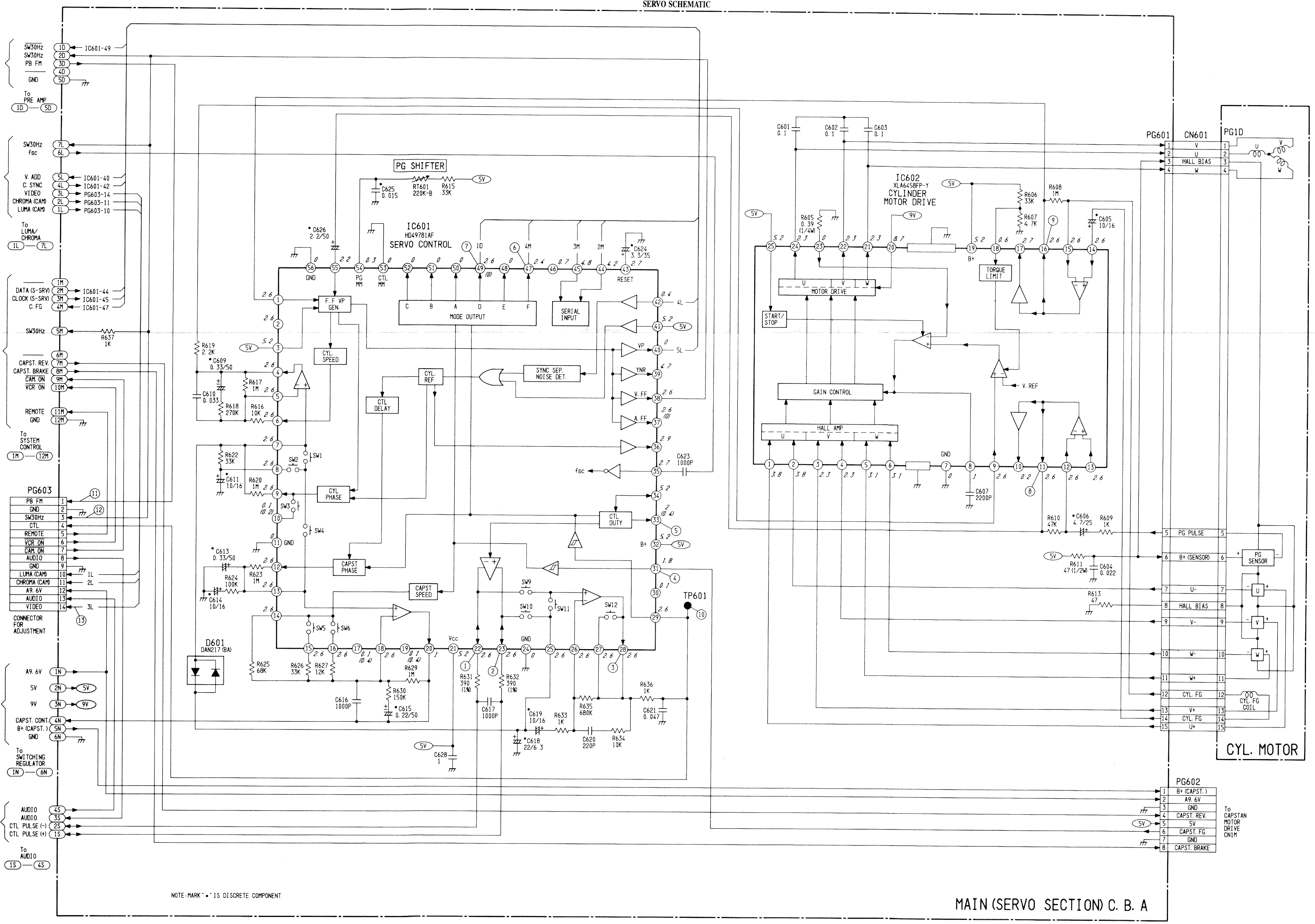
VOLTAGES TAKEN IN THE SP PLAY MODE ( ) RECORD MODE


2-11
2-15
2-14
2-18
IC201
HA118186F
LUMA/CHROMA PROCESS
IC202
MSM7458MS-KR4
1H DELAY
IC204
BA7046F-E2
SYNC SEPA.
Q201
DTC124K (25)
SW
Q209
DTC124K (25)
SW
D202
MA152WA
D201
1SS353SP (C)
ZD205
MA3075H (75H)
ZD203
MA3075H (75H)
D208
DAN217 (BA)
CX201
3.58MHz
DL201
1H DELAY
CP201
TP204
PB5V
REC5V
5V
LUMA (PB)
LUMA (REC)
CHROMA (REC)
CHROMA (PB)
GND
To PRE AMP
To SWITCHING REGULATOR
To AUDIO
GND
VIDEO
VIDEO
To SYSTEM CONTROL
H. SYNC
V. SYNC
CNT. EVF. F
COUNT F
DATA F
COUNT
DATE
VIDEO (EVF)
CLOCK (S-YC)
DATA (S-YC)
SHORT PROT.
LUMA (CAM)
CHROMA (CAM)
LUMA (CAM)
CHROMA (CAM)
VIDEO
C. SYNC
V. ADD
fsc
SW30Hz
To SERVO
MAIN DE-EMPH.
MAIN EMPH.
FM MOD
CLAMP
YNR
NOISE CANCEL
PICTURE CONT.
LUMA FILTER
SUB EMPH.
SUB DE-EMPH.
MAIN DE-EMPH.
SUB LPF
FM MOD.
LIMIT
BURST EMPH.
MAIN CONV.
150nS DELAY
1.3MHz LPF
DELAY
COLOR KILLER
FEED BACK CLAMP
ALC
CHARA. MIX.
AGC
SQUELCH
Y/C MIX.
COLOR KILLER
SYNC SEPA.
BPF
ACC
BAND GAP
MUTE
BURST DEEMPH.
ACC DET.
MODE SELECT
2MHz LPF
AUTO BAL.
4PHASE GEN.
1/2 2fL VCO
X2
fsc VCXO/OSC
9.35MHz TRAP
CLOCK DRIVE
CLAMP
AUTO BIAS
CCD
S/H
PHASE COMP.
SYNC SEPA.
H. OSC
V. SEPA.
NOTE:MARK "*" IS DISCRETE COMPONENT
MAIN (LUMA/CHROMA SECTION) C. B. A

2-15 2-16 2-17 2-18

2-K1 2-K2 2-K3 2-K4

SERVO SCHEMATIC


IC601 HD49781AF SERVO CONTROL
IC602 XLA6458FP-Y CYLINDER MOTOR DRIVE
PG SHIFTER
PG603
CONNECTOR FOR ADJUSTMENT
PG601
CN601
PG1D
PG602
To CAPSTAN MOTOR DRIVE CN1M
CYL. MOTOR
To PRE AMP
To LUMA/ CHROMA
To SYSTEM CONTROL
To SWITCHING REGULATOR
To AUDIO
SW30Hz
PB FM
GND
fsc
V. ADD
C. SYNC
VIDEO
CHROMA (CAM)
LUMA (CAM)
DATA (S-SRV)
CLOCK (S-SRV)
C. FG
CAPST. REV.
CAPST. BRAKE
CAM ON
VCR ON
REMOTE
A9. 6V
5V
9V
CAPST. CONT.
B+ (CAPST.)
AUDIO
CTL PULSE (-)
CTL PULSE (+)
F. F VP GEN.
CYL. SPEED
CYL. REF
CTL DELAY
SYNC SEP. NOISE DET.
MODE OUTPUT
SERIAL INPUT
CYL PHASE
CAPST PHASE
CAPST SPEED
CTL DUTY
RESET
D601 DAN217 (BA)
TP601
MOTOR DRIVE
START/ STOP
GAIN CONTROL
HALL AMP
TORQUE LIMIT
V. REF
HALL BIAS
PG PULSE
B+ (SENSOR)
PG SENSOR
CYL. FG
CYL. FG COIL
U- V- W- U+ V+ W+
CAPST. FG
MAIN (SERVO SECTION) C. B. A

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CALLOUTS NEXT TO WIRING PLUGS INDICATE CONNECTIONS TO OTHER SCHEMATICS.

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VOLTAGES TAKEN IN THE SP PLAY MODE ( ) RECORD MODE

NOTE: MARK "*" IS DISCRETE COMPONENT

2-K5 2-K6 2-K7 2-K8

T.C. Corp
10 North Main St
Wharton NJ 07885
www.servicemanuals.net

2-L1 2-L2 2-L3 2-L4

SYSTEM CONTROL SCHEMATIC

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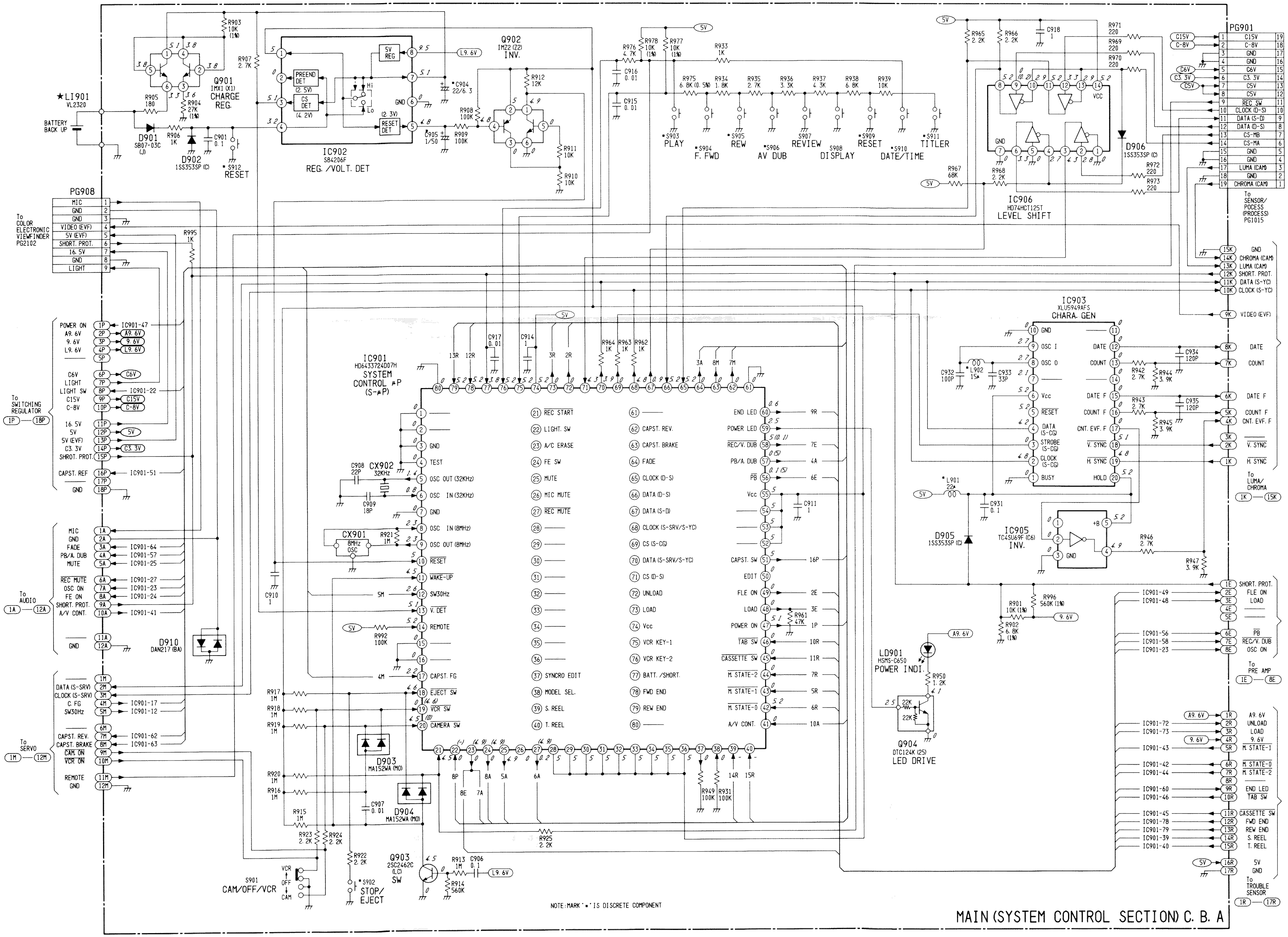
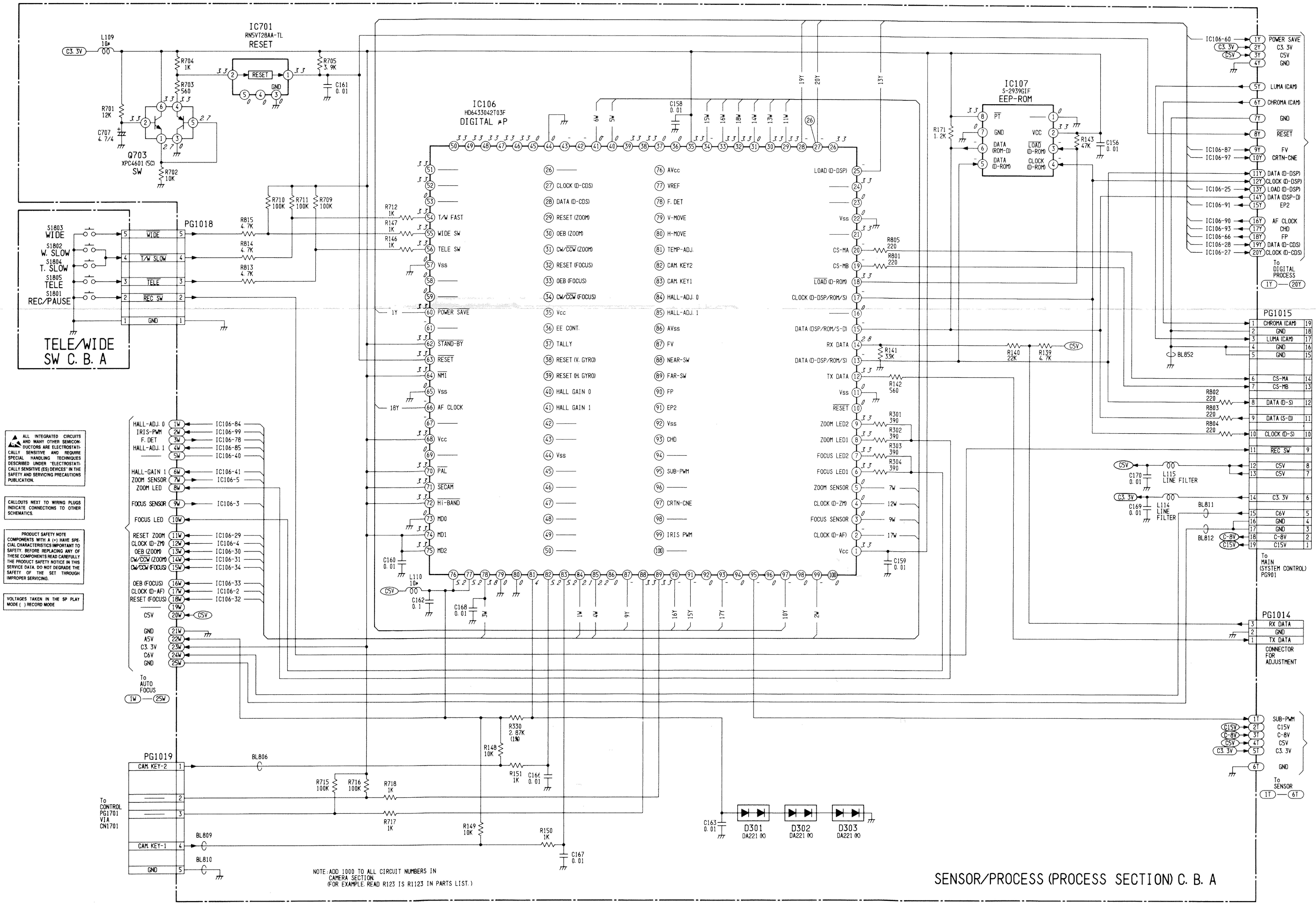
VOLTAGES TAKEN IN THE SP PLAY MODE ( ) RECORD MODE


★LI901
VL2320
BATTERY BACK UP
Q901
IMX1 (X1)
CHARGE REG.
R903 10K (1%)
R905 180
R904 27K (1%)
R906 1K
D901 SB07-03C (J)
D902 1SS353SP (C)
C901 0.1
*S912 RESET
IC902 S84206F REG./VOLT. DET
PREEND DET (2.5V)
CS DET (4.2V)
5V REG
RESET DET
L9.6V
Q902 IMZ2 (Z2) INV.
R912 12K
C904 22/6.3
R908 100K
R909 100K
C905 1/50
R911 10K
R910 10K
R907 2.7K
5V
R976 4.7K
R978 10K (1%)
R977 10K (1%)
R933 1K
C916 0.01
C915 0.01
R975 6.8K (0.5%)
R934 1.8K
R935 2.7K
R936 3.3K
R937 4.3K
R938 6.8K
R939 10K
*S903 PLAY
*S904 F.FWD
*S905 REW
*S906 AV DUB
S907 REVIEW
S908 DISPLAY
*S909 RESET
*S910 DATE/TIME
*S911 TITLER
R965 2.2K
R966 2.2K
C918 1
R971 220
R969 220
R970 220
R967 68K
R968 2.2K
IC906 HD74HCT125T LEVEL SHIFT
D906 1SS353SP (C)
R972 220
R973 220
PG901
C15V
C-8V
GND
C6V
C3.3V
C5V
REC SW
CLOCK (D-S)
DATA (S-D)
DATA (D-S)
CS-MB
CS-MA
LUMA (CAM)
CHROMA (CAM)
To SENSOR/ POCESS (PROCESS) PG1015
PG908
MIC
GND
VIDEO (EVF)
5V (EVF)
SHORT. PROT.
16.5V
LIGHT
To COLOR ELECTRONIC VIEWFINDER PG2102
R995 1K
To SWITCHING REGULATOR
POWER ON
A9.6V
9.6V
L9.6V
C6V
LIGHT SW
C15V
C-8V
16.5V
5V
5V (EVF)
C3.3V
SHROT. PROT.
CAPST. REF
To AUDIO
FADE
PB/A. DUB
MUTE
REC MUTE
OSC ON
FE ON
A/V CONT.
D910 DAN217 (BA)
To SERVO
DATA (S-SRV)
CLOCK (S-SRV)
C. FG
SW30Hz
CAPST. REV.
CAPST. BRAKE
CAM ON
VCR ON
REMOTE
IC901 HD6433724D07H SYSTEM CONTROL µP (S-µP)
C917 0.01
C914 1
R964 1K
R963 1K
R962 1K
C908 22P
CX902 32KHz
C909 18P
CX901 8MHz OSC
R921 1M
R992 100K
C910 1
R917 1M
R918 1M
R919 1M
R920 1M
R916 1M
R915 1M
D903 MA152WA (MO)
D904 MA152WA (MO)
C907 0.01
R923 2.2K
R924 2.2K
R922 2.2K
S901 CAM/OFF/VCR
*S902 STOP/ EJECT
Q903 2SC2462C (LC) SW
R913 1M
C906 0.1
R914 560K
R925 2.2K
R949 100K
R931 100K
GND
TEST
OSC OUT (32KHz)
OSC IN (32KHz)
OSC IN (8MHz)
OSC OUT (8MHz)
RESET
WAKE-UP
SW30Hz
V. DET
REMOTE
CAPST. FG
EJECT SW
VCR SW
CAMERA SW
REC START
LIGHT. SW
A/C ERASE
FE SW
MUTE
MIC MUTE
REC MUTE
SYNCRO EDIT
MODEL SEL.
S. REEL
T. REEL
CAPST. REV.
CAPST. BRAKE
FADE
CLOCK (D-S)
DATA (D-S)
DATA (S-D)
CLOCK (S-SRV/S-YC)
CS (S-CG)
DATA (S-SRV/S-YC)
CS (D-S)
UNLOAD
LOAD
Vcc
VCR KEY-1
VCR KEY-2
BATT. /SHORT
FWD END
REW END
END LED
POWER LED
REC/V. DUB
PB/A. DUB
PB
CAPST. SW
EDIT
FLE ON
POWER ON
TAB SW
CASSETTE SW
M. STATE-2
M. STATE-1
M. STATE-0
A/V CONT.
C911 1
R961 47K
IC903 XLU5949AFS CHARA. GEN
OSC I
OSC O
STROBE (S-CG)
CLOCK (S-CG)
BUSY
DATE
COUNT
DATE F
COUNT F
CNT. EVF. F
V. SYNC
H. SYNC
HOLD
L902 15µ
C932 100P
C933 33P
R942 2.7K
R944 3.9K
R943 2.7K
R945 3.9K
C934 120P
C935 120P
L901 22µ
C931 0.1
D905 1SS353SP (C)
IC905 TC4SU69F (C6) INV.
R946 2.7K
R947 3.9K
CHROMA (CAM)
LUMA (CAM)
DATA (S-YC)
CLOCK (S-YC)
VIDEO (EVF)
To LUMA/ CHROMA
R901 10K (1%)
R902 6.8K (1%)
R996 560K (1%)
LD901 HSMS-C650 POWER INDI.
R950 1.2K
Q904 DTC124K (25) LED DRIVE
SHORT. PROT.
FLE ON
LOAD
REC/V. DUB
OSC ON
To PRE AMP
UNLOAD
M. STATE-1
M. STATE-0
M. STATE-2
END LED
TAB SW
CASSETTE SW
FWD END
REW END
S. REEL
T. REEL
To TROUBLE SENSOR
NOTE:MARK "*" IS DISCRETE COMPONENT
MAIN (SYSTEM CONTROL SECTION) C. B. A

2-L5 2-L6 2-L7 2-L8

2-M1 2-M2 2-M3 2-M4

PROCESS SCHEMATIC


IC701
RN5VT28AA-TL
RESET
L109
10μ
C3.3V
R704
1K
R703
560
R705
3.9K
C161
0.01
R701
12K
C707
4.7/4
Q703
XPC4601 (5C)
SW
R702
10K
IC106
HD6433042T03F
DIGITAL μP
C158
0.01
IC107
S-2939GIF
EEP-ROM
PT
GND
VCC
DATA (ROM-D)
LOAD (D-ROM)
CLOCK (D-ROM)
R171
1.2K
R143
47K
C156
0.01
S1803 WIDE
S1802 W.SLOW
S1804 T.SLOW
S1805 TELE
S1801 REC/PAUSE
PG1018
WIDE
T/W SLOW
TELE
REC SW
GND
TELE/WIDE SW C.B.A
R710 100K
R711 100K
R709 100K
R815 4.7K
R814 4.7K
R813 4.7K
R712 1K
R147 1K
R146 1K
T/W FAST
WIDE SW
TELE SW
Vss
POWER SAVE
STAND-BY
RESET
NMI
AF CLOCK
Vcc
PAL
SECAM
Hi-BAND
MD0
MD1
MD2
CLOCK (D-CDS)
DATA (D-CDS)
RESET (ZOOM)
OEB (ZOOM)
CW/CCW (ZOOM)
RESET (FOCUS)
OEB (FOCUS)
CW/CCW (FOCUS)
EE CONT.
TALLY
RESET (V. GYRO)
RESET (H. GYRO)
HALL GAIN 0
HALL GAIN 1
AVcc
VREF
F.DET
V-MOVE
H-MOVE
TEMP-ADJ.
CAM.KEY2
CAM.KEY1
HALL-ADJ.0
HALL-ADJ.1
AVss
FV
NEAR-SW
FAR-SW
FP
EP2
CHD
SUB-PWM
CRTN-CNE
IRIS PWM
LOAD (D-DSP)
CS-MA
CS-MB
LOAD (D-ROM)
CLOCK (D-DSP/ROM/S)
DATA (DSP/ROM/S-D)
RX DATA
DATA (D-DSP/ROM/S)
TX DATA
ZOOM LED2
ZOOM LED1
FOCUS LED2
FOCUS LED1
ZOOM SENSOR
CLOCK (D-ZM)
FOCUS SENSOR
CLOCK (D-AF)
R805 220
R801 220
R141 33K
R142 560
R301 390
R302 390
R303 390
R304 390
C159 0.01
C160 0.01
L110 10μ
C162 0.1
C168 0.01
HALL-ADJ.0
IRIS-PWM
F.DET
HALL-ADJ.1
HALL-GAIN 1
ZOOM SENSOR
ZOOM LED
FOCUS SENSOR
FOCUS LED
RESET ZOOM
CLOCK (D-ZM)
OEB (ZOOM)
CW/CCW (ZOOM)
CW/CCW (FOCUS)
OEB (FOCUS)
CLOCK (D-AF)
RESET (FOCUS)
C5V
GND
A5V
C3.3V
C6V
GND
To AUTO FOCUS
1W — 25W
IC106-84
IC106-99
IC106-78
IC106-85
IC106-40
IC106-41
IC106-5
IC106-3
IC106-29
IC106-4
IC106-30
IC106-31
IC106-34
IC106-33
IC106-2
IC106-32
POWER SAVE
C3.3V
C5V
GND
LUMA (CAM)
CHROMA (CAM)
GND
RESET
FV
CRTN-CNE
DATA (D-DSP)
CLOCK (D-DSP)
LOAD (D-DSP)
DATA (DSP-D)
EP2
AF CLOCK
CHD
FP
DATA (D-CDS)
CLOCK (D-CDS)
IC106-60
IC106-87
IC106-97
IC106-25
IC106-91
IC106-90
IC106-93
IC106-66
IC106-28
IC106-27
To DIGITAL PROCESS
1Y — 20Y
PG1015
CHROMA (CAM)
GND
LUMA (CAM)
GND
GND
CS-MA
CS-MB
DATA (D-S)
DATA (S-D)
CLOCK (D-S)
REC SW
C5V
C5V
C3.3V
C6V
GND
GND
C-8V
C15V
To MAIN (SYSTEM CONTROL) PG901
BL852
R140 22K
R139 4.7K
R802 220
R803 220
R804 220
C170 0.01
L115 LINE FILTER
C169 0.01
L114 LINE FILTER
BL811
BL812
PG1014
RX DATA
GND
TX DATA
CONNECTOR FOR ADJUSTMENT
SUB-PWM
C15V
C-8V
C5V
C3.3V
GND
To SENSOR
1T — 6T
PG1019
CAM.KEY-2
CAM.KEY-1
GND
To CONTROL PG1701 VIA CN1701
BL806
BL809
BL810
R715 100K
R716 100K
R718 1K
R717 1K
R330 2.87K (1%)
R148 10K
R151 1K
C164 0.01
R149 10K
R150 1K
C167 0.01
C163 0.01
D301 DA221 (K)
D302 DA221 (K)
D303 DA221 (K)

ALL INTEGRATED CIRCUITS AND MANY OTHER SEMICONDUCTORS ARE ELECTROSTATICALLY SENSITIVE AND REQUIRE SPECIAL HANDLING TECHNIQUES DESCRIBED UNDER "ELECTROSTATICALLY SENSITIVE (ES) DEVICES" IN THE SAFETY AND SERVICING PRECAUTIONS PUBLICATION.

CALLOUTS NEXT TO WIRING PLUGS INDICATE CONNECTIONS TO OTHER SCHEMATICS.

PRODUCT SAFETY NOTE

COMPONENTS WITH A (*) HAVE SPECIAL CHARACTERISTICS IMPORTANT TO SAFETY. BEFORE REPLACING ANY OF THESE COMPONENTS READ CAREFULLY THE PRODUCT SAFETY NOTICE IN THIS SERVICE DATA. DO NOT DEGRADE THE SAFETY OF THE SET THROUGH IMPROPER SERVICING.

VOLTAGES TAKEN IN THE SP PLAY MODE ( ) RECORD MODE

NOTE: ADD 1000 TO ALL CIRCUIT NUMBERS IN CAMERA SECTION.
(FOR EXAMPLE, READ R123 IS R1123 IN PARTS LIST.)

SENSOR/PROCESS (PROCESS SECTION) C.B.A

2-M5 2-M6 2-M7 2-M8

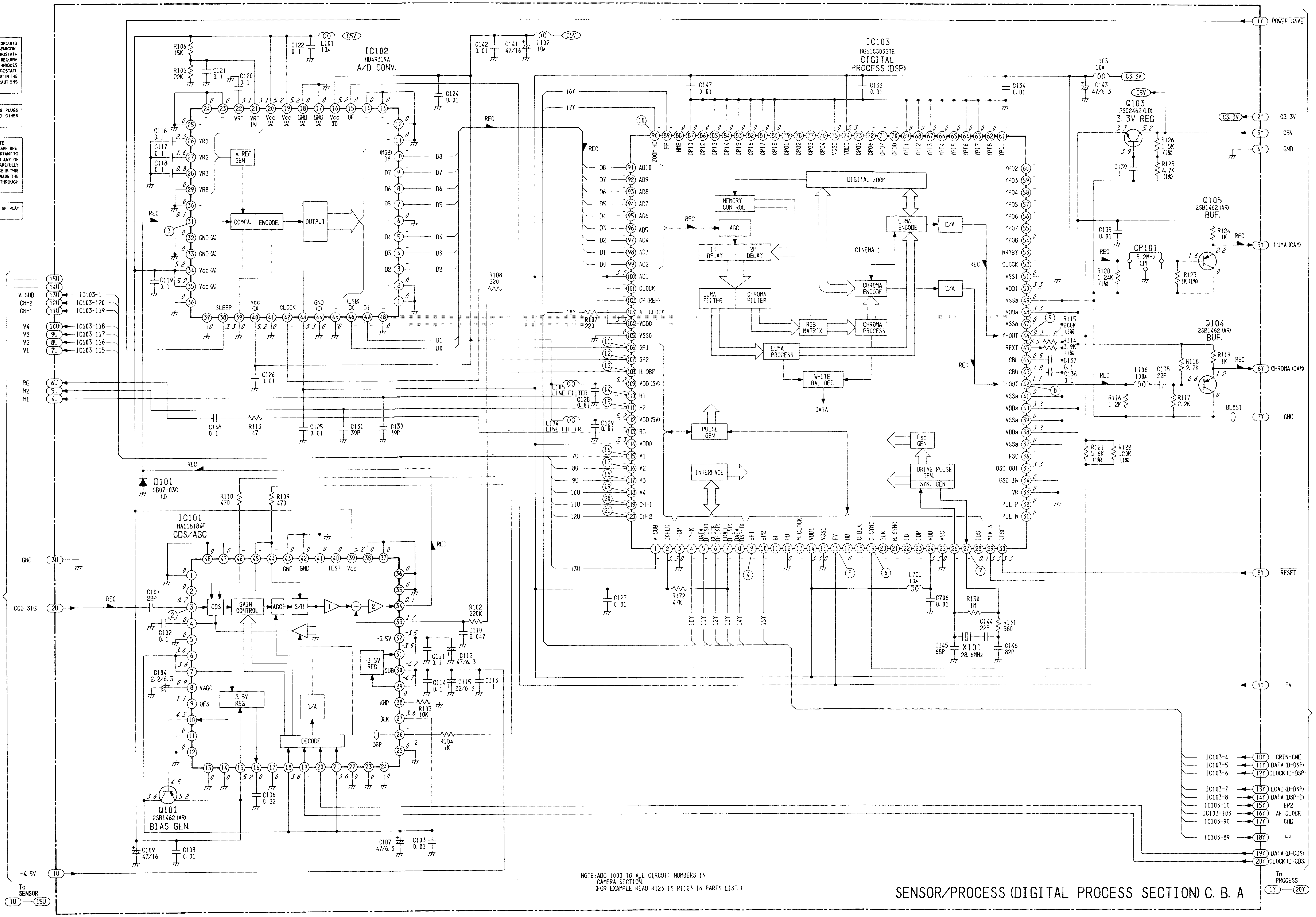
DIGITAL SCHEMATIC

ALL INTEGRATED CIRCUITS AND MANY OTHER SEMICONDUCTORS ARE ELECTROSTATICALLY SENSITIVE AND REQUIRE SPECIAL HANDLING TECHNIQUES DESCRIBED UNDER "ELECTROSTATICALLY SENSITIVE (ES) DEVICES" IN THE SAFETY AND SERVICING PRECAUTIONS PUBLICATION.

CALLOUTS NEXT TO WIRING PLUGS INDICATE CONNECTIONS TO OTHER SCHEMATICS.

PRODUCT SAFETY NOTE
COMPONENTS WITH A (⋆) HAVE SPECIAL CHARACTERISTICS IMPORTANT TO SAFETY. BEFORE REPLACING ANY OF THESE COMPONENTS READ CAREFULLY THE PRODUCT SAFETY NOTICE IN THIS SERVICE DATA. DO NOT DEGRADE THE SAFETY OF THE SET THROUGH IMPROPER SERVICING.

VOLTAGES TAKEN IN THE SP PLAY MODE ( ) RECORD MODE


IC102
HD49319A
A/D CONV.
IC103
HG51CS035TE
DIGITAL
PROCESS (DSP)
IC101
HA118184F
CDS/AGC
Q101
2SB1462 (AR)
BIAS GEN.
Q103
2SC2462 (LD)
3.3V REG
Q105
2SB1462 (AR)
BUF.
Q104
2SB1462 (AR)
BUF.
CP101
5.2MHz LPF
D101
SB07-03C
X101
28.6MHz
DIGITAL ZOOM
MEMORY CONTROL
AGC
1H DELAY
2H DELAY
LUMA FILTER
CHROMA FILTER
RGB MATRIX
LUMA PROCESS
CHROMA PROCESS
CHROMA ENCODE
LUMA ENCODE
WHITE BAL. DET.
D/A
CINEMA 1
PULSE GEN.
INTERFACE
Fsc GEN.
DRIVE PULSE GEN.
SYNC GEN.
DATA
V. REF GEN.
COMPA. ENCODE.
OUTPUT
CDS
GAIN CONTROL
S/H
3.5V REG
-3.5V REG
DECODE
REC
C5V
C3.3V
V. SUB
CH-2
CH-1
V4
V3
V2
V1
RG
H2
H1
GND
CCD SIG.
-4.5V
To SENSOR
1U — 15U
POWER SAVE
C3.3V
C5V
GND
LUMA (CAM)
CHROMA (CAM)
GND
RESET
FV
IC103-4 CRTN-CNE
IC103-5 DATA (D-DSP)
IC103-6 CLOCK (D-DSP)
IC103-7 LOAD (D-DSP)
IC103-8 DATA (DSP-D)
IC103-10 EP2
IC103-103 AF CLOCK
IC103-90 CHD
IC103-89 FP
DATA (D-CDS)
CLOCK (D-CDS)
To PROCESS
1Y — 20Y

NOTE: ADD 1000 TO ALL CIRCUIT NUMBERS IN CAMERA SECTION.
(FOR EXAMPLE. READ R123 IS R1123 IN PARTS LIST.)

SENSOR/PROCESS (DIGITAL PROCESS SECTION) C. B. A

AUDIO SCHEMATIC

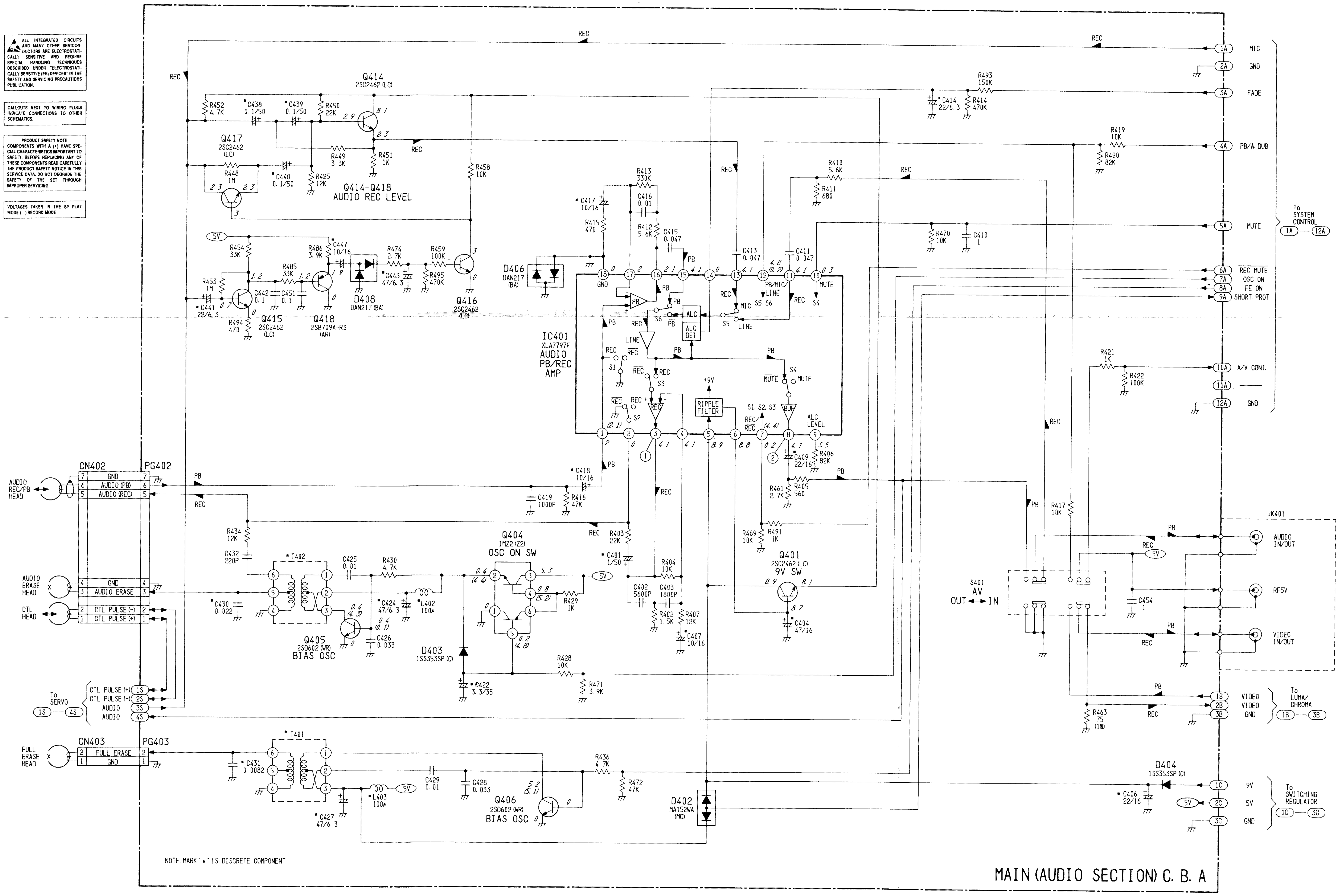
ALL INTEGRATED CIRCUITS AND MANY OTHER SEMICONDUCTORS ARE ELECTROSTATICALLY SENSITIVE AND REQUIRE SPECIAL HANDLING TECHNIQUES DESCRIBED UNDER "ELECTROSTATICALLY SENSITIVE (ES) DEVICES" IN THE SAFETY AND SERVICING PRECAUTIONS PUBLICATION.

CALLOUTS NEXT TO WIRING PLUGS INDICATE CONNECTIONS TO OTHER SCHEMATICS.

PRODUCT SAFETY NOTE

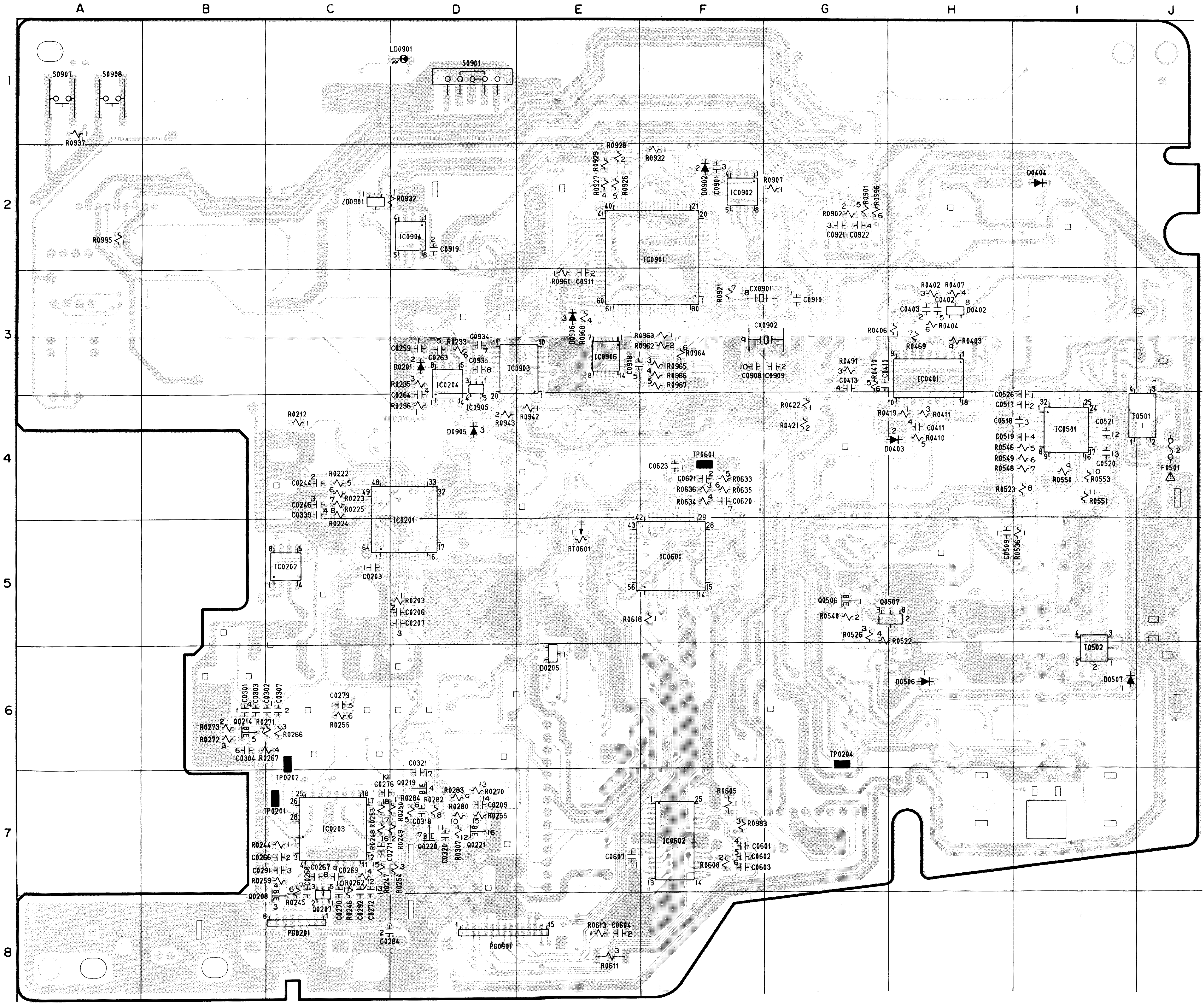
COMPONENTS WITH A (•) HAVE SPECIAL CHARACTERISTICS IMPORTANT TO SAFETY. BEFORE REPLACING ANY OF THESE COMPONENTS READ CAREFULLY THE PRODUCT SAFETY NOTICE IN THIS SERVICE DATA. DO NOT DEGRADE THE SAFETY OF THE SET THROUGH IMPROPER SERVICING.

VOLTAGES TAKEN IN THE SP PLAY MODE ( ) RECORD MODE


Q414
2SC2462 (LC)
Q417
2SC2462 (LC)
Q414-Q418
AUDIO REC LEVEL
R452 4.7K
C438 0.1/50
C439 0.1/50
R450 22K
R449 3.3K
R451 1K
R448 1M
C440 0.1/50
R425 12K
R458 10K
5V
R454 33K
R486 3.9K
C447 10/16
R474 2.7K
R459 100K
R485 33K
R453 1M
C442 0.1
C451 0.1
C443 47/6.3
R495 470K
C441 22/6.3
R494 470
Q415
2SC2462 (LC)
Q418
2SB709A-RS (AR)
D408
DAN217 (BA)
Q416
2SC2462 (LC)
D406
DAN217 (BA)
C417 10/16
R415 470
R413 330K
C416 0.01
R412 5.6K
C415 0.047
C413 0.047
C411 0.047
R410 5.6K
R411 680
IC401
XLA7797F
AUDIO
PB/REC
AMP
GND
ALC
ALC DET
PB/MIC/LINE
MIC
S5, S6
LINE
MUTE
S4
RIPPLE FILTER
+9V
BUF
ALC LEVEL
S1, S2, S3
C418 10/16
C419 1000P
R416 47K
R403 22K
C401 1/50
R404 10K
C402 5600P
C403 1800P
R402 1.5K
R407 12K
C407 10/16
C409 22/16
R406 82K
R405 560
R461 2.7K
R469 10K
R491 1K
Q401
2SC2462 (LC)
9V SW
C404 47/16
R493 150K
C414 22/6.3
R414 470K
R419 10K
R420 82K
R470 10K
C410 1
R421 1K
R422 100K
R417 10K
MIC
GND
FADE
PB/A. DUB
MUTE
REC MUTE
OSC ON
FE ON
SHORT. PROT.
A/V CONT.
GND
To SYSTEM CONTROL
1A — 12A
CN402
PG402
AUDIO REC/PB HEAD
GND
AUDIO (PB)
AUDIO (REC)
AUDIO ERASE HEAD
AUDIO ERASE
CTL HEAD
CTL PULSE (-)
CTL PULSE (+)
R434 12K
C432 220P
T402
C425 0.01
R430 4.7K
C430 0.022
C424 47/6.3
L402 100μ
C426 0.033
Q405
2SD602 (WR)
BIAS OSC
Q404
IMZ2 (Z2)
OSC ON SW
R429 1K
D403
1SS353SP (C)
C422 3.3/35
R428 10K
R471 3.9K
To SERVO
1S — 4S
CTL PULSE (+)
CTL PULSE (-)
AUDIO
AUDIO
CN403
PG403
FULL ERASE HEAD
FULL ERASE
GND
T401
C431 0.0082
L403 100μ
C427 47/6.3
C429 0.01
C428 0.033
Q406
2SD602 (WR)
BIAS OSC
R436 4.7K
R472 47K
D402
MA152WA (MO)
S401
AV
OUT ◄► IN
C454 1
JK401
AUDIO IN/OUT
RF5V
VIDEO IN/OUT
R463 75 (1%)
VIDEO
VIDEO
GND
To LUMA/CHROMA
1B — 3B
D404
1SS353SP (C)
C406 22/16
9V
5V
GND
To SWITCHING REGULATOR
1C — 3C
REC
PB
NOTE: MARK "•" IS DISCRETE COMPONENT
MAIN (AUDIO SECTION) C. B. A

2-P1 2-P2 2-P3

MAIN CIRCUIT BOARD (Side A)


A
B
C
D
E
F
G
H
I
J
1
2
3
4
5
6
7
8
S0907
S0908
R0937
LD0901
S0901
ZD0901
R0932
IC0904
C0919
R0995
R0928
R0929
R0922
R0927
R0926
D0902
C0901
IC0902
R0907
IC0901
R0961
C0911
R0921
CX0901
C0910
D0404
R0902
R0901
R0996
C0921
C0922
R0402
R0407
C0403
C0402
D0402
R0406
R0404
R0403
R0459
CX0902
C0908
C0909
D0906
R0968
IC0906
C0918
R0963
R0962
R0964
R0965
R0966
R0967
C0259
R0233
C0934
C0263
C0935
D0201
IC0204
IC0903
R0235
C0264
R0236
C0905
R0943
R0942
D0905
R0491
C0413
R0470
C0410
IC0401
R0422
R0421
R0419
R0411
C0411
R0410
D0403
C0526
C0517
C0518
C0519
IC0501
C0521
C0520
T0501
F0501
R0546
R0549
R0548
R0550
R0553
R0551
R0523
R0212
C0623
TP0601
C0621
R0633
R0636
R0635
R0634
C0620
C0244
R0222
C0246
R0223
C0338
R0225
R0224
IC0201
RT0601
IC0601
IC0202
C0203
R0203
C0206
C0207
R0618
C0509
R0536
Q0506
Q0507
R0540
R0526
R0522
T0502
D0205
D0506
D0507
C0301
C0303
C0302
C0307
C0279
R0256
R0273
Q0214
R0271
R0266
R0272
C0304
R0267
TP0202
TP0204
TP0201
C0321
C0276
Q0219
R0283
R0270
R0284
R0282
R0280
C0209
R0255
C0318
IC0203
R0253
R0250
R0249
Q0220
R0307
Q0221
C0320
R0244
R0248
C0266
C0271
C0291
C0267
C0269
R0259
R0262
Q0208
R0245
Q0207
C0270
R0246
C0292
C0272
R0247
R0254
PG0201
C0284
PG0601
R0605
R0983
IC0602
C0601
C0607
C0602
R0608
C0603
R0613
C0604
R0611

2-P5 2-P6 2-P7 2-P8

LEADNESS COMPONENT LOCATION GUIDE -MAIN-
LUMA/CHROMA/PRE AMP -SIDE A-

Q207	FMG5(G5)	8C-1
Q208	DTC124K(25)	8C-3
Q214	2SC2462C(LC)	6B-5
Q219	2SC2462C(LC)	7D-4
Q220	DTC143TK(03)	7D-7
Q221	2SB709A-RS(AR)	7D-16
D201	1SS353SP(C)	3D-2
D205	MA152WA(MO)	6E-1
R203	1kΩ	5D-1
R212	270Ω	4C-1
R222	4.7kΩ	4C-5
R223	2.7kΩ	4C-6
R224	2.7kΩ	4C-8
R225	560Ω	4C-7
R233	470kΩ	3D-6
R235	470kΩ	3D-3
R236	130kΩ	4D-1
R244	100Ω	7C-1
R245	5.6Ω	7C-6
R246	5.6Ω	7C-11
R247	100Ω	7C-15
R248	18kΩ	7C-17
R249	22kΩ	7D-2
R250	2.2kΩ	7D-1
R253	820Ω	7C-18
R254	470kΩ	7D-3
R255	1.5kΩ	7D-15
R256	680Ω	6C-6
R259	2.2kΩ	7C-4
R262	2.2kΩ	7C-14
R266	1.2kΩ	6C-3
R267	1.2kΩ	6C-4
R270	1.5kΩ	7D-13
R271	1.2kΩ	6B-7
R272	820Ω	6B-3
R273	680Ω	6B-2
R280	1.2kΩ	7D-10
R282	390Ω	7D-8
R283	1.5kΩ	7D-9
R284	560Ω	7D-5
R307	1.5kΩ	7D-12
C203	0.033μF	5C-1
C206	39PF	5D-2
C207	150PF	5D-3
C209	470PF	7D-14
C244	33PF	4C-2
C246	330PF	4C-3
C259	2200PF	3D-1
C263	0.01μF	3D-5
C264	100PF	3D-4
C266	0.022μF	7C-2
C267	68PF	7C-8
C268	0.022μF	7C-7
C269	68PF	7C-9
C270	0.022μF	7C-10
C271	0.022μF	7C-16
C272	0.022μF	7C-13
C276	47PF	7C-19
C279	12PF	6C-5
C284	120PF	8C-2
C291	0.01μF	7C-3
C292	0.01μF	7C-12
C301	0.033μF	6B-1
C302	0.033μF	6C-1
C303	120PF	6B-4
C304	0.01μF	6B-6
C307	0.01μF	6C-2
C318	0.01μF	7D-6
C320	1000PF	7D-11
C321	0.01μF	7D-17
C338	33PF	4C-4

LEADLESS COMPONENT LOCATION GUIDE -MAIN-
SERVO -SIDE A-

RT601	220k-B	5E-1
R605	0.39Ω	7F-1
R608	1MΩ	7F-2
R611	47Ω	8E-3
R613	47Ω	8E-1
R618	270kΩ	5F-1
R633	1kΩ	4F-5
R634	10kΩ	4F-4
R635	680kΩ	4F-6
R636	1kΩ	4F-3
C601	0.1μF	7F-4
C602	0.1μF	7F-5
C603	0.1μF	7F-6
C604	0.022μF	8E-2
C607	2200PF	7E-1
C620	220PF	4F-7
C621	0.047μF	4F-2
C623	1000PF	4F-1

LEADLESS COMPONENT LOCATION GUIDE -MAIN-
SWITCHING REGULATOR -SIDE A-

Q506	DTC124K(25)	5G-1
Q507	2SB1424R(AE)	5H-2
D506	1SS353SP(C)	6H-1
D507	1SS353SP(C)	6I-1
F501	2A/125V	4J-2
T501	BV10211R	4J-1
T502	TRANSFORMER	5I-2
R522	390Ω	5G-4
R523	22kΩ	4I-8
R526	10kΩ	5G-3
R536	47Ω	5I-1
R540	390Ω	5G-2
R546	100Ω	4I-5
R548	2.2kΩ	4I-7
R549	100kΩ	4I-6
R550	39Ω	4I-9
R551	5.6kΩ	4I-11
R553	75kΩ	4I-10
C509	0.22μF	5H-1
C517	4700PF	4I-2
C518	1000PF	4I-3
C519	1000PF	4I-4
C520	1000PF	4I-13
C521	4700PF	4I-12
C526	4700PF	4I-1

2-P4

LEADLESS COMPONENT LOCATION GUIDE
-MAIN- AUDIO -SIDE A-

D402	MA152WA(MO)	3H-8
D403	1SS353SP(C)	4H-2
D404	1SS353SP(C)	2I-1
R402	1.5kΩ	3H-3
R403	22kΩ	3H-9
R404	10kΩ	3H-6
R406	82kΩ	3H-1
R407	12kΩ	3H-4
R410	5.6kΩ	4H-5
R411	680Ω	4H-3
R419	10kΩ	4H-1
R421	1kΩ	4G-2
R422	100kΩ	4G-1
R469	10kΩ	3H-7
R470	10kΩ	3G-5
R491	1kΩ	3G-3
C402	5600PF	3H-5
C403	1800PF	3H-2
C410	1μF	3G-6
C411	0.047μF	4H-4
C413	0.047μF	3G-4

LEADLESS COMPONENT LOCATION GUIDE -MAIN-
SYSTEM CONTROL/TROUBLE SENSOR -SIDE A-

D902	1SS353SP(C)	2F-2
D905	1SS353SP(C)	4D-3
D906	1SS353SP(C)	3E-3
ZD901	MA3075L(75L)	2C-1
CX901	8MHz	3F-8
CX902	32kHz	3F-9
LD901	HSMS-C650	1D-1
R901	10kΩ	2G-5
R902	6.8kΩ	2G-2
R907	2.7kΩ	2G-1
R921	1MΩ	3F-7
R922	2.2kΩ	2F-1
R926	1kΩ	2E-5
R927	1kΩ	2E-4
R928	47kΩ	2E-2
R929	47kΩ	2E-1
R932	10kΩ	2D-1
R937	4.3kΩ	1A-1
R942	2.7kΩ	4E-1
R943	2.7kΩ	4D-2
R961	47kΩ	3E-1
R962	1kΩ	3F-2
R963	1kΩ	3F-1
R964	1kΩ	3F-6
R965	2.2kΩ	3F-3
R966	2.2kΩ	3F-4
R967	68kΩ	3F-5
R968	2.2kΩ	3E-4
R983	82Ω	7F-3
R995	1kΩ	2A-1
R996	560kΩ	2G-6
C901	0.1μF	2F-3
C908	22PF	3F-10
C909	18PF	3G-2
C910	1μF	3G-1
C911	1μF	3E-2
C918	1μF	3E-5
C919	0.1μF	2D-2
C921	1000PF	2G-3
C922	0.01μF	2G-4
C934	120PF	3D-7
C935	120PF	3D-8

2-P4

2-P8

BLANK

2-P8

T.C. Corp
10 North Main St
Wharton NJ 07885
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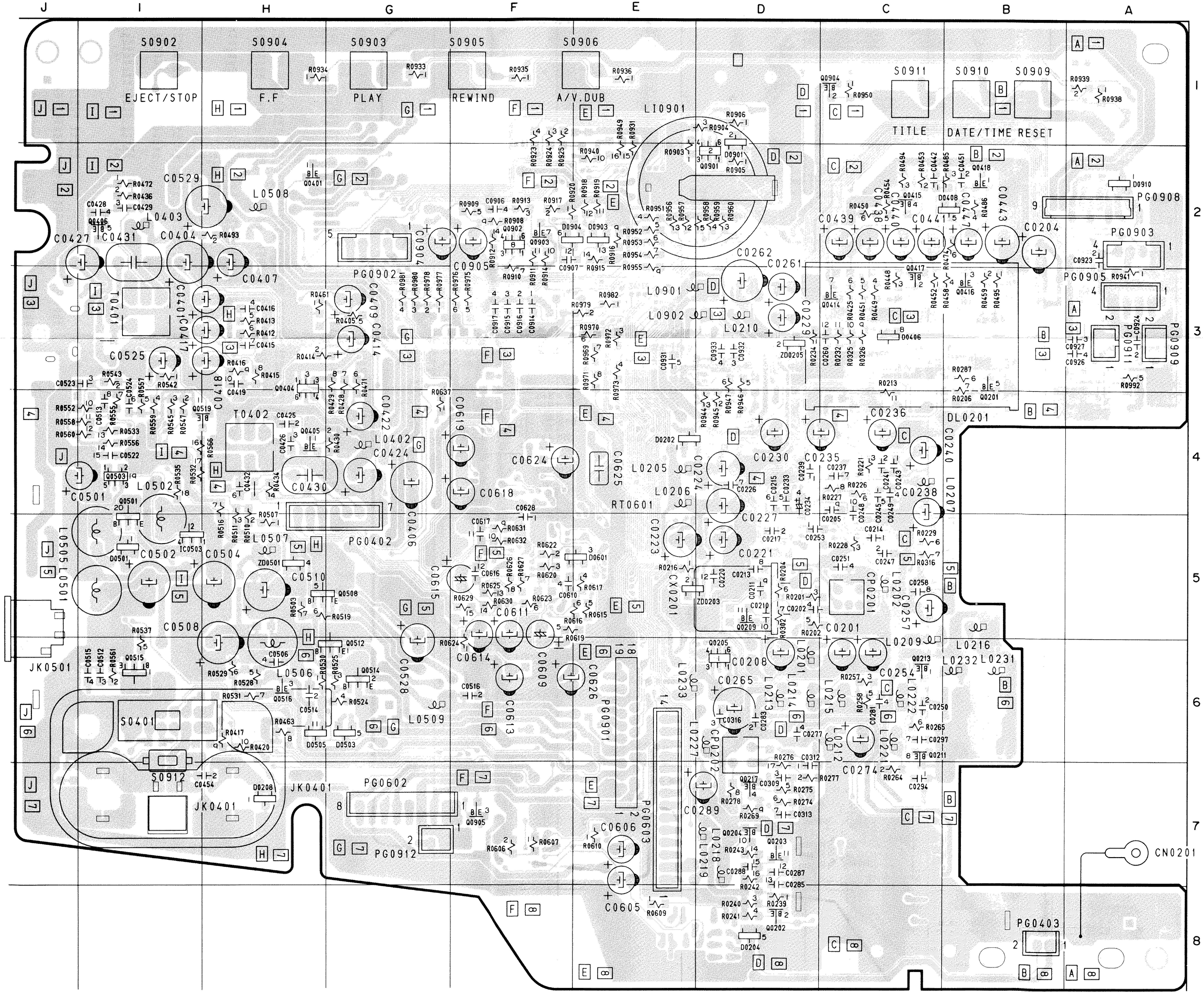
2-Q1 2-Q2 2-Q3 2-Q4

MAIN CIRCUIT BOARD (Side B)



2-Q5 2-Q6 2-Q7 2-Q8

LEADLESS COMPONENT LOCATION GUIDE
-MAIN- LUMA/CHROMA/PRE AMP -SIDE B-

Q201	DTC124K(25)	3B-5
Q202	2SB709A-RS(AR)	8D-2
Q203	2SB709A-RS(AR)	7D-11
Q204	DTC124K(25)	7D-10
Q205	IMB10(B10)	6D-1
Q209	DTC124K(25)	5D-11
Q211	2SB709A-RS(AR)	6C-8
Q213	DTC124K(25)	6C-1
Q217	2SC2462C(LC)	7D-4
D202	MA152WA(MO)	4E-1
D204	DAN217(BA)	8D-5
D208	DAN217(BA)	7H-1
ZD203	MA3075H(75H)	5E-2
ZD205	MA3075H(75H)	3D-2
R201	10kΩ	5D-3
R202	2.2kΩ	5D-5
R204	1kΩ	5D-6
R206	150kΩ	3B-7
R213	1.2kΩ	4C-11
R216	75Ω	5E-1
R221	1.8kΩ	4C-3
R226	1.8kΩ	4C-6
R227	6.8kΩ	4C-8
R228	22kΩ	5C-3
R229	3.9kΩ	5C-6
R232	390Ω	3C-11
R234	10kΩ	3D-1
R239	680Ω	8D-1
R240	120Ω	8D-3
R241	820Ω	8D-4
R242	47kΩ	7D-16
R243	68kΩ	7D-14
R257	1.5kΩ	6C-3
R258	2.7kΩ	6C-5
R264	560Ω	7C-2
R265	680Ω	6C-6
R269	2.2kΩ	7D-9
R274	560Ω	7D-6
R275	1.2kΩ	7D-5
R276	470Ω	6D-17
R277	1kΩ	7D-2
R278	2.2kΩ	7D-8
R287	82kΩ	3B-6
R302	390kΩ	5D-7
R316	8.2kΩ	5C-7
R325	1.5kΩ	3C-10
R326	1.5kΩ	3C-9
C202	0.015μF	5D-4
C205	0.01μF	4C-9
C210	56PF	5D-10
C211	0.022μF	5D-9
C213	0.068μF	5D-8
C214	56PF	5C-1
C215	0.22μF	4D-6
C217	0.01μF	5D-2
C220	0.01μF	5D-12
C226	0.01μF	4D-7
C233	0.47μF	4D-5
C234	2.2μF/6.3v	4D-4
C237	0.1μF/25v	4C-7
C239	0.1μF/25v	4D-1
C241	0.022μF	4C-2
C243	0.01μF	4C-1
C245	0.47μF	4C-5
C247	1μF	5C-2
C248	150PF	4C-10
C249	0.22μF	4C-4
C250	0.01μF	6C-2
C251	0.01μF	5C-4
C253	0.047μF	5D-1
C258	0.01μF	5C-8
C260	1000PF	3C-12
C277	0.022μF	6D-4
C281	33PF	6C-4
C283	0.068μF	6D-2
C285	39PF	7D-13
C287	33PF	7D-12
C288	33PF	7D-15
C294	330PF	7C-1
C297	18PF	6C-7
C309	150PF	7D-3
C312	0.01μF	7D-1
C313	0.01μF	7D-7
C316	100PF	6D-3

LEADLESS COMPONENT LOCATION GUIDE -MAIN-
SERVO -SIDE B-

D601	DAN217(BA)	5E-3
R606	33kΩ	7F-2
R607	4.7kΩ	7F-1
R609	1kΩ	8E-1
R610	47kΩ	7E-1
R615	33kΩ	5E-5
R616	10kΩ	5E-6
R617	1MΩ	5E-4
R619	2.2kΩ	5F-5
R620	1MΩ	5F-3
R622	33kΩ	5F-2
R623	1MΩ	5F-6
R624	100kΩ	6F-1
R625	68kΩ	5F-13
R626	33kΩ	5F-8
R627	12kΩ	5F-7
R629	1MΩ	5F-15
R630	150kΩ	5F-14
R631	390Ω	5F-9
R632	390Ω	5F-10
R637	1kΩ	4G-1
C610	0.033μF	5F-4
C616	1000PF	5F-12
C617	1000PF	5F-11
C628	1μF	5F-1

LEADLESS COMPONENT LOCATION GUIDE
-MAIN- AUDIO -SIDE B-

Q401	2SC2462(LC)	2H-1
Q404	IMZ2(Z2)	3H-3
Q405	2SD602(WR)	4H-1
Q406	2SD602(WR)	2I-5
Q414	2SC2462(LC)	3C-7
Q415	2SC2462(LC)	2C-4
Q416	2SC2462(LC)	3B-3
Q417	2SC2462(LC)	3C-2
Q418	2SB709A(AR)	2B-1
D406	DAN217(BA)	3C-8
D408	DAN217(BA)	2B-5
R405	560Ω	3G-5
R412	5.6kΩ	3H-6
R413	330kΩ	3H-5
R414	470kΩ	3H-2
R415	470Ω	3H-8
R416	47kΩ	3H-9
R417	10kΩ	6H-9
R420	82kΩ	6H-10
R425	12kΩ	3C-6
R428	10kΩ	3G-7
R429	1kΩ	3G-8
R430	4.7kΩ	4G-2
R434	12kΩ	4H-4
R436	4.7kΩ	2I-2
R448	1MΩ	3C-3
R449	3.3kΩ	3C-4
R450	22kΩ	2C-6
R451	1kΩ	3C-5
R452	4.7kΩ	3C-1
R453	1MΩ	2C-2
R454	33kΩ	2C-9
R458	10kΩ	3B-4
R459	100kΩ	3B-2
R461	2.7kΩ	3H-1
R463	75Ω	6H-8
R471	3.9kΩ	3G-6
R472	47kΩ	2I-1
R474	2.7kΩ	2B-6
R485	33kΩ	2B-3
R486	3.9kΩ	2B-4
R493	150kΩ	2H-2
R494	470Ω	2C-3
R495	470kΩ	3B-1
C415	0.047μF	3H-7
C416	0.01μF	3H-4
C419	1000PF	3H-10
C425	0.01μF	4H-2
C426	0.033μF	4H-3
C428	0.033μF	2I-4
C429	0.01μF	2I-3
C432	220PF	4H-6
C442	0.1μF	2C-1
C451	0.1μF	2B-2
C454	1μF	7H-2

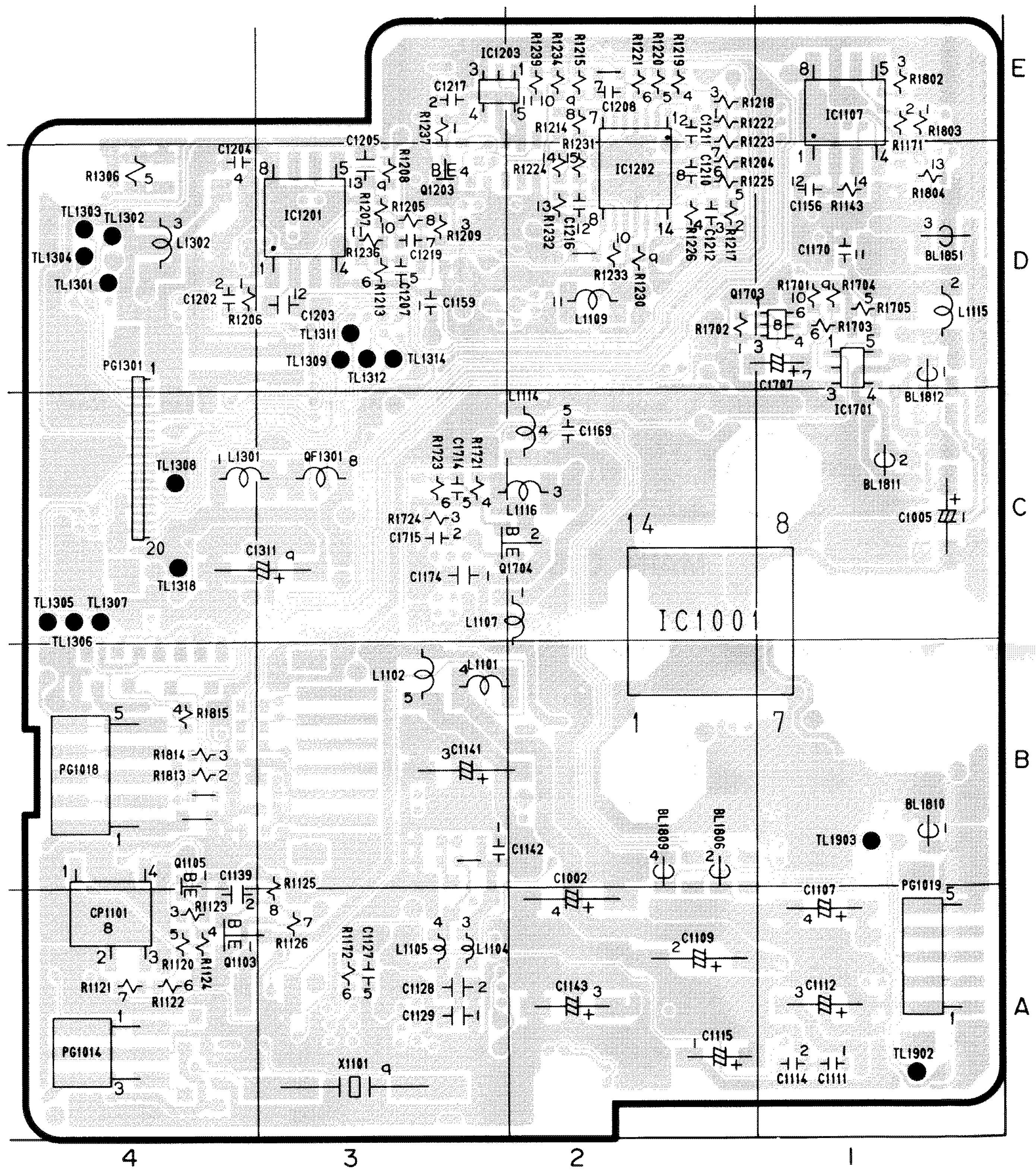
LEADLESS COMPONENT LOCATION GUIDE -MAIN-
SYSTEM CONTROL/TROUBLE SENSOR -SIDE B-

Q901	IMX1(X1)	2D-2
Q902	IMZ2(Z2)	2F-8
Q903	2SC2462L(LC)	2F-7
Q904	DTC124K(25)	1C-2
Q905	2SC2462L(LC)	7F-3
D901	SB07-03C(J)	1D-2
D903	MA152WA(MO)	2E-13
D904	MA152WA(MO)	2F-6
D910	DAN217(BA)	2A-1
R903	10kΩ	2E-1
R904	27kΩ	1D-3
R905	180Ω	2D-1
R906	1kΩ	1D-1
R908	100kΩ	2F-9
R909	100kΩ	2F-5
R910	10kΩ	3F-7
R911	10kΩ	2F-11
R912	12kΩ	2F-14
R913	1MΩ	2F-3
R914	560kΩ	2F-10
R915	1MΩ	2E-14
R916	1MΩ	2E-9
R917	1MΩ	2F-2
R918	1MΩ	2E-12
R919	1MΩ	2E-11
R920	1MΩ	2F-1
R923	2.2kΩ	1F-4
R924	2.2kΩ	1F-3
R925	2.2kΩ	1F-2
R931	100kΩ	2E-15
R933	1kΩ	1G-1
R934	1.8kΩ	1H-1
R935	2.7kΩ	1F-1
R936	3.3kΩ	1E-1
R938	6.8kΩ	1A-1
R939	10kΩ	1A-2
R940	470Ω	2E-10
R941	470Ω	3A-1
R944	3.9kΩ	4D-3
R945	3.9kΩ	4D-2
R946	2.7kΩ	3D-5
R947	3.9kΩ	3D-6
R949	100kΩ	2E-16
R950	1.2kΩ	1C-1
R951	10kΩ	2E-4
R952	10kΩ	2E-5
R953	10kΩ	2E-6
R954	10kΩ	2E-7
R955	10kΩ	2E-9
R956	4.7kΩ	2E-3
R957	4.7kΩ	2E-2
R958	4.7kΩ	2D-5
R959	4.7kΩ	2D-4
R960	4.7kΩ	2D-3
R969	220Ω	3E-7
R970	220Ω	3E-6
R971	220Ω	3E-8
R972	220Ω	3E-3
R973	220Ω	3E-4
R975	6.8kΩ	3F-5
R976	4.7kΩ	3F-6
R977	10kΩ	3G-1
R978	10kΩ	3G-2
R979	2.2kΩ	3E-2
R980	2.2kΩ	3G-3
R981	1kΩ	3G-4
R982	1kΩ	3E-1
R992	100kΩ	3A-5
C906	0.1μF	2F-4
C907	0.01μF	2F-12
C914	1μF	3F-1
C915	0.01μF	3F-3
C916	0.01μF	3F-2
C917	0.01μF	3F-4
C923	1000PF	2A-2
C924	0.01μF	3A-2
C926	0.01μF	3A-4
C927	0.01μF	3A-3
C931	0.1μF	3E-5
C932	100PF	3D-3
C933	33PF	3D-4

LEADLESS COMPONENT LOCATION GUIDE -MAIN-
SWITCHING REGULATOR -SIDE B-

Q501	2SB1121(BD)	4I-20
Q503	FMC2(C2)	4I-19
Q508	2SD1766R(DBR)	5H-5
Q512	2SD1766R(DBR)	6G-1
Q514	2SD1766R(DBR)	6G-2
Q515	2SD1624(DG)	6I-1
Q516	2SD602(WR)	6H-3
Q519	DTC124K(25)	4I-1
D501	SB07-03C(J)	5I-1
D503	MA152WA(MO)	6G-5
D505	MA152WA(MO)	6H-11
ZD501	MA3100L(10L)	5H-4
R503	4.7kΩ	5H-7
R507	12kΩ	5H-1
R510	56kΩ	5H-2
R511	22kΩ	5H-3
R516	180Ω	4H-7
R519	820Ω	5H-6
R524	100Ω	6G-4
R525	390Ω	6G-3
R528	1kΩ	6H-5
R529	22kΩ	6H-6
R530	2.2kΩ	6H-1
R531	82Ω	6H-7
R532	22kΩ	4I-17
R533	150kΩ	4I-13
R535	47Ω	4I-18
R537	120Ω	6I-5
R542	6.8kΩ	3I-1
R543	6.8kΩ	3I-2
R545	10kΩ	4I-3
R547	47Ω	4I-2
R552	6.8kΩ	4I-10
R555	12kΩ	4I-7
R556	27kΩ	4I-14
R557	5.6kΩ	4I-5
R558	6.8kΩ	4I-11
R559	6.8kΩ	4I-4
R560	6.8kΩ	4I-12
R561	3.3kΩ	6I-2
R566	2.7kΩ	4I-16
C506	0.1μF	6H-4
C512	0.1μF	6I-3
C513	0.1μF	4I-8
C514	1μF	6H-2
C515	1μF	6I-4
C516	1μF	6F-2
C522	0.1μF	4I-15
C523	0.1μF	3I-3
C524	1000PF	4I-6

SENSOR/PROCESS CIRCUIT BOARD (Side A)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TL1302
TL1304
TL1301
TL1311
TL1309
TL1314
TL1312
TL1308
TL1318
TL1305
TL1307
TL1306
TL1903
TL1902
BL1851
BL1812
BL1811
BL1810
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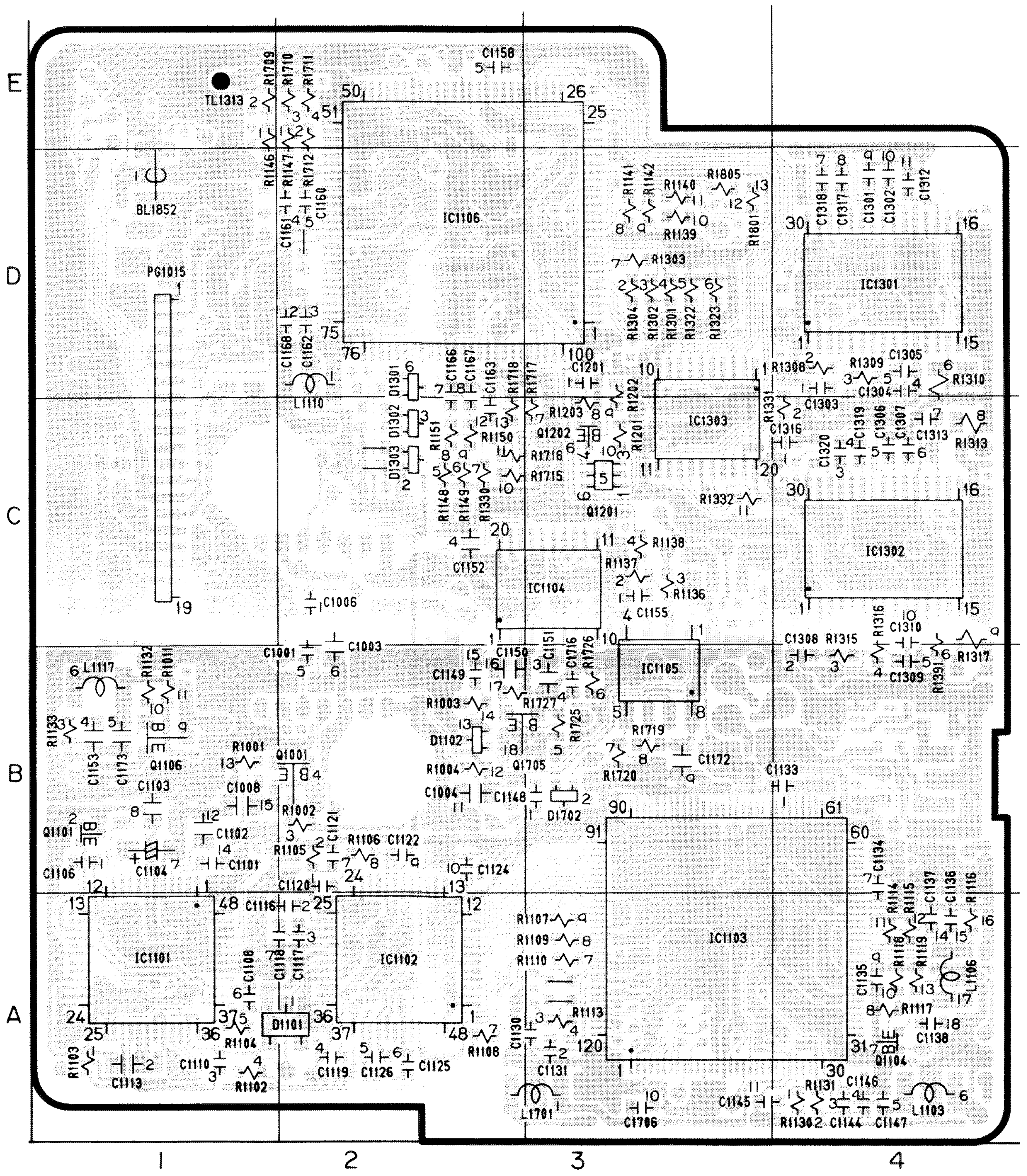
LEADLESS COMPONENT LOCATION GUIDE SENSOR/PROCESS -SIDE A-

Q1103	2SC2462(LD)	4A-1	R1219	15kΩ	2E-4
Q1105	2SB1462(AR)	4B-1	R1220	330kΩ	2E-5
Q1203	UN9213(8C)	3D-4	R1221	220kΩ	2E-6
Q1703	XPC4601(5C)	1D-8	R1222	330kΩ	2E-1
Q1704	2SC2462(LD)	2C-2	R1223	220kΩ	2D-7
			R1224	100kΩ	2D-14
QF1301	FUC-1CP0.2A9	3C-8	R1225	100kΩ	2D-5
			R1226	100kΩ	2D-4
L1101	10µH	3B-4	R1230	100kΩ	2D-9
L1102	10µH	3B-5	R1231	6.8kΩ	2D-15
L1104	BLM21A05	3A-3	R1232	5.6kΩ	2D-13
L1105	BLM21A05	3A-4	R1233	56kΩ	2D-10
L1107	10µH	2C-1	R1234	27kΩ	2E-10
L1109	10µH	2D-11	R1236	180Ω	3D-11
L1114	60CORE	2C-4	R1237	10kΩ	3E-1
L1115	60CORE	1D-2	R1239	4.7kΩ	2E-11
L1116	10µH	2C-3	R1306	3.9Ω	4D-5
L1301	10µH	4C-1	R1701	12kΩ	1D-10
L1302	10µH	4D-3	R1702	10kΩ	2D-1
			R1703	560Ω	1D-6
BL1806	CORE	2B-2	R1704	1kΩ	1D-9
BL1809	CORE	2B-4	R1705	3.9kΩ	1D-5
BL1810	CORE	1B-1	R1721	12kΩ	3C-4
BL1811	BLM21A05	1C-2	R1723	1.43kΩ	3C-6
BL1812	BLM21A05	1D-1	R1724	1kΩ	3C-3
BL1851	60CORE	1D-3	R1802	220Ω	1E-3
			R1803	220Ω	1E-1
CP1101	FLC5R2LPF5	4A-8	R1804	220Ω	1D-13
			R1813	4.7kΩ	4B-2
X1101	28.6MHz	3A-9	R1814	4.7kΩ	4B-3
			R1815	4.7kΩ	4B-4
R1120	1.24kΩ	4A-5			
R1121	5.6kΩ	4A-7	C1002	47µF/16v	2A-4
R1122	120kΩ	4A-6	C1005	33µF/10v	1C-1
R1123	1kΩ	4A-3	C1107	47µF/6.3v	1A-4
R1124	1kΩ	4A-4	C1109	47µF/16	2A-2
R1125	4.7kΩ	3A-8	C1111	0.1µF	1A-1
R1126	1.5kΩ	3A-7	C1112	47µF/6.3	1A-3
R1143	47kΩ	1D-14	C1114	0.1µF	1A-2
R1171	1.2kΩ	1E-2	C1115	22µF/6.3	2A-1
R1172	47kΩ	3A-6	C1127	0.01µF	3A-5
R1204	10kΩ	2D-6	C1128	0.01µF	3A-2
R1205	15kΩ	3D-8	C1129	0.01µF	3A-1
R1206	270kΩ	4D-1	C1139	1µF	4A-2
R1207	100kΩ	3D-10	C1141	47µF/16v	3B-3
R1208	1MΩ	3D-9	C1142	0.01µF	3B-1
R1209	100kΩ	3D-3	C1143	47µF/6.3v	2A-3
R1213	4.7kΩ	3D-6	C1156	0.01µF	1D-12
R1214	330Ω	2E-8	C1159	0.01µF	3D-1
R1215	100kΩ	2E-9	C1169	0.01µF	2C-5
R1217	12kΩ	2D-2	C1170	0.01µF	1D-11
R1218	15kΩ	2E-3	C1174	1µF	3C-1

2-R2

2-R6

SENSOR/PROCESS CIRCUIT BOARD (Side B)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Q1001
Q1101
Q1104
Q1106
Q1201
Q1202
Q1705
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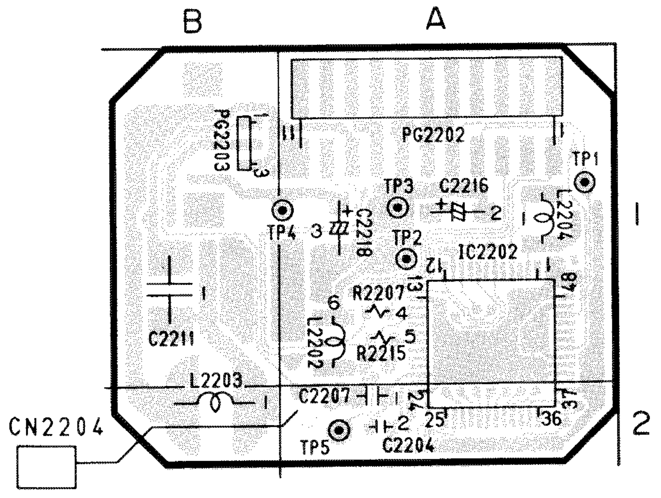
LEADLESS COMPONENT LOCATION GUIDE SENSOR PROCESS -SIDE B-

Q1001	2SC2620(QC)	2B-4
Q1101	2SB1462(AR)	1B-2
Q1104	2SB1462(AR)	4A-7
Q1106	2SA1037K(HQ)	1B-9
Q1201	XP4401(5K)	3C-5
Q1202	2SD2261R(YR)	3C-6
Q1705	2SA1036K(HQ)	2B-18
D1101	SB07-03C(J)	2A-1
D1102	MA132WK(MU)	2B-13
D1301	DA221(K)	2D-6
D1302	DA221(K)	2C-3
D1303	DA221(K)	2C-2
D1702	MA132WK(MU)	3B-2
L1103	10µH	4A-6
L1106	100µH	4A-17
L1110	10µH	2D-1
L1117	10µH	1B-6
L1701	10µH	3A-1
BL1852	60CORE	1D-1
R1001	6.8kΩ	1B-13
R1002	100Ω	2B-3
R1003	1MΩ	2B-14
R1004	1MΩ	2B-12
R1011	100Ω	1B-11
R1102	220kΩ	1A-4
R1103	10kΩ	1A-1
R1104	1kΩ	1A-5
R1105	22kΩ	2B-2
R1106	15kΩ	2B-8
R1107	220Ω	3A-9
R1108	220Ω	2A-7
R1109	470Ω	3A-8
R1110	470Ω	3A-7
R1113	47Ω	3A-4
R1114	3.9kΩ	4A-11
R1115	200kΩ	4A-12
R1116	1.2kΩ	4A-16
R1117	2.2kΩ	4A-8
R1118	2.2kΩ	4A-10
R1119	1kΩ	4A-13
R1130	1MΩ	4A-1
R1131	560Ω	4A-2
R1132	3.3kΩ	1B-10
R1133	6.8kΩ	1B-3
R1136	10kΩ	3C-3
R1137	2.7kΩ	3C-2
R1138	100kΩ	3C-4
R1139	4.7kΩ	3D-10
R1140	22kΩ	3D-11
R1141	33kΩ	3D-8
R1142	560Ω	3D-9
R1146	1kΩ	1E-1
R1147	1kΩ	2E-1
R1148	10kΩ	2C-5
R1149	10kΩ	2C-6
R1150	1kΩ	2C-9
R1151	1kΩ	2C-8
R1201	100Ω	3C-10
R1202	100Ω	3C-9
R1203	1.5kΩ	3C-8
R1301	390Ω	3D-4
R1302	390Ω	3D-3
R1303	390Ω	3D-7
R1304	390Ω	3D-2
R1308	10kΩ	4D-2
R1309	10kΩ	4D-3
R1310	3.9Ω	4D-6
R1313	3.9Ω	4C-8
R1315	10kΩ	4B-3
R1316	10kΩ	4B-4
R1317	3.9Ω	4C-9
R1322	56kΩ	3D-5
R1323	56kΩ	3D-6
R1330	2.87kΩ	2C-7
R1331	100kΩ	4C-2
R1332	100kΩ	3C-11
R1391	5.6kΩ	4B-6
R1709	100kΩ	1E-2
R1710	100kΩ	2E-3
R1711	100kΩ	2E-4
R1712	1kΩ	2E-2
R1715	100kΩ	2C-10

R1716	100kΩ	2C-11
R1717	1kΩ	3C-7
R1718	1kΩ	2C-13
R1719	9.1kΩ	3B-8
R1720	2.7kΩ	3B-7
R1725	750Ω	3B-5
R1726	15kΩ	3B-6
R1727	6.8kΩ	2B-17
R1801	220Ω	3D-13
R1805	220Ω	3D-12
C1001	0.047µF	2B-5
C1003	1µF	2B-6
C1004	1µF	2B-11
C1006	0.047µF	2C-1
C1008	1µF	1B-15
C1101	22PF	1B-14
C1102	0.1µF	1B-12
C1103	0.01µF	1B-8
C1104	2.2µF/6.3v	1B-7
C1106	0.22µF	1B-1
C1108	0.01µF	1A-6
C1110	0.047µF	1A-3
C1113	1µF	1A-2
C1116	0.1µF	2A-2
C1117	0.1µF	2A-3
C1118	0.1µF	1A-7
C1119	0.1µF	2A-4
C1120	0.1µF	2B-1
C1121	0.1µF	2B-7
C1122	0.1µF	2B-9
C1124	0.01µF	2B-10
C1125	0.01µF	2A-6
C1126	0.01µF	2A-5
C1130	39PF	3A-3
C1131	39PF	3A-2
C1133	0.01µF	4B-1
C1134	0.01µF	4B-7
C1135	0.01µF	4A-9
C1136	0.1µF	4A-15
C1137	0.1µF	4A-14
C1138	22PF	4A-18
C1144	22PF	4A-3
C1145	68PF	3A-11
C1146	82PF	4A-4
C1147	0.01µF	4A-5
C1148	0.1µF	3B-1
C1149	0.1µF	2B-15
C1150	1µF	2B-16
C1151	1µF	3B-3
C1152	1µF	2C-4
C1153	0.1µF	1B-4
C1155	0.1µF	3C-1
C1158	0.01µF	2E-5
C1160	0.01µF	2D-5
C1161	0.01µF	2D-4
C1162	0.1µF	2D-3
C1163	0.01µF	2C-12
C1166	0.01µF	2D-7
C1167	0.01µF	2D-8
C1168	0.01µF	2D-2
C1172	0.1µF	3B-9
C1173	1µF	1B-5
C1201	0.01µF	3D-1
C1301	0.01µF	4D-9
C1302	3300PF	4D-10
C1303	4700PF	4D-1
C1304	4700PF	4D-4
C1305	0.01µF	4D-5
C1306	0.01µF	4C-5
C1307	3300PF	4C-6
C1308	4700PF	4B-2
C1309	4700PF	4B-5
C1310	0.01µF	4C-10
C1312	0.1µF	4D-11
C1313	0.1µF	4C-7
C1316	0.1µF	4C-1
C1317	0.01µF	4D-8
C1318	0.01µF	4D-7
C1319	0.01µF	4C-4
C1320	0.01µF	4C-3
C1706	0.01µF	3A-10
C1716	0.22µF	3B-4

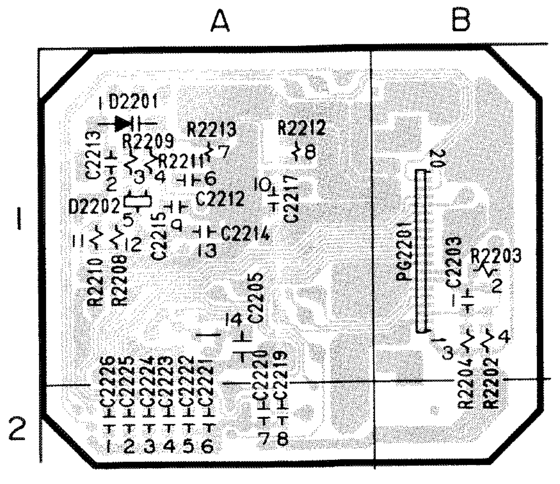
LCD DRIVE CIRCUIT BOARD (Side A)


B
A
PG2203
PG2202
TP1
TP2
TP3
TP4
TP5
IC2202
C2216
C2218
C2204
C2211
C2207
L2203
L2202
R2207
R2215
CN2204
1
2

LEADLESS COMPONENT LOCATION GUIDE
LCD DRIVE -A-

L2202	33µH	1A-6
L2203	390µH	2B-1
L2204	15µH	1A-1
R2207	2.7kΩ	1A-4
R2215	1kΩ	1A-5
C2204	0.1µF	2A-2
C2207	1µF	2A-1
C2211	33µF/6.3V	1B-1
C2216	2.2µF/50V	1A-2
C2218	4.7µF/25V	1A-3

LCD DRIVE CIRCUIT BOARD (Side B)

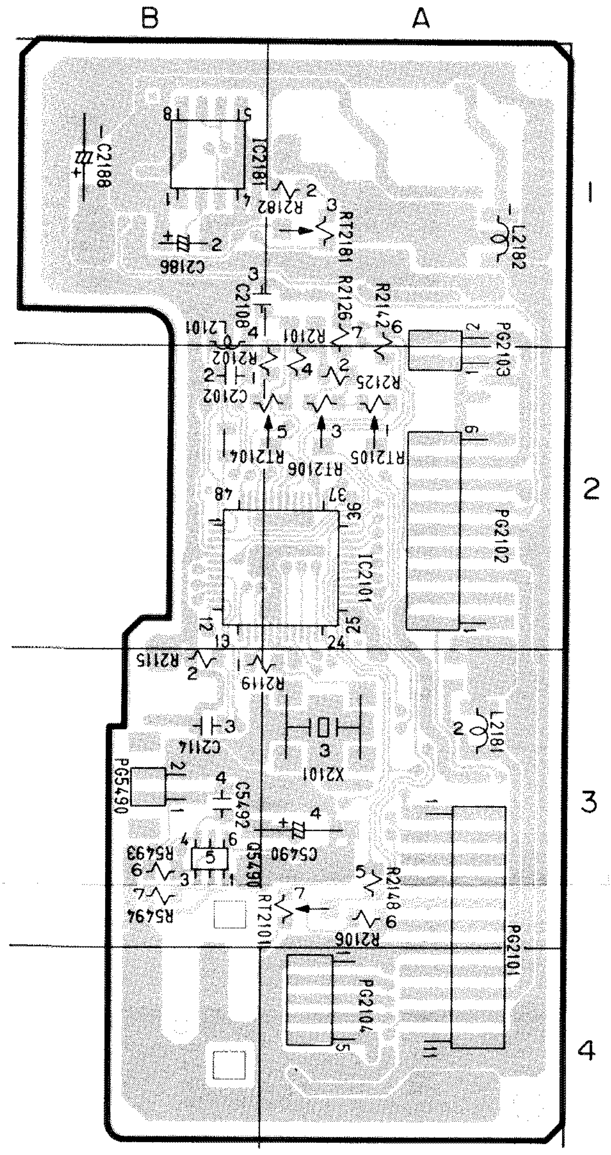

A
B
D2201
D2202
R2213
R2212
R2209
R2211
R2210
R2208
R2203
R2204
R2202
C2213
C2212
C2214
C2217
C2215
C2205
C2203
C2220
C2219
PG2201
1
2

LEADLESS COMPONENT LOCATION GUIDE
LCD DRIVE -B-

D2201	1SV201	1A-1
D2202	MA132K(MI)	1A-5
R2202	390kΩ	1B-4
R2203	22kΩ	1B-2
R2204	68kΩ	1B-3
R2208	470Ω	1A-12
R2209	4.7kΩ	1A-3
R2210	1.2kΩ	1A-11
R2211	100kΩ	1A-4
R2212	12kΩ	1A-8
R2213	12kΩ	1A-7
C2203	0.1µF	1B-1
C2205	1µF	1A-14
C2212	0.1µ	1A-6
C2213	1000PF	1A-2
C2214	120PF	1A-13
C2215	4700PF	1A-9
C2217	4700PF	1A-10
C2219	27PF	2A-8
C2220	27PF	2A-7
C2221	27PF	2A-6
C2222	27PF	2A-5
C2223	27PF	2A-4
C2224	27PF	2A-3
C2225	27PF	2A-2
C2226	27PF	2A-1

2-S1

COLOR ELECTRONIC VIEWFINDER CIRCUIT BOARD (Side A)

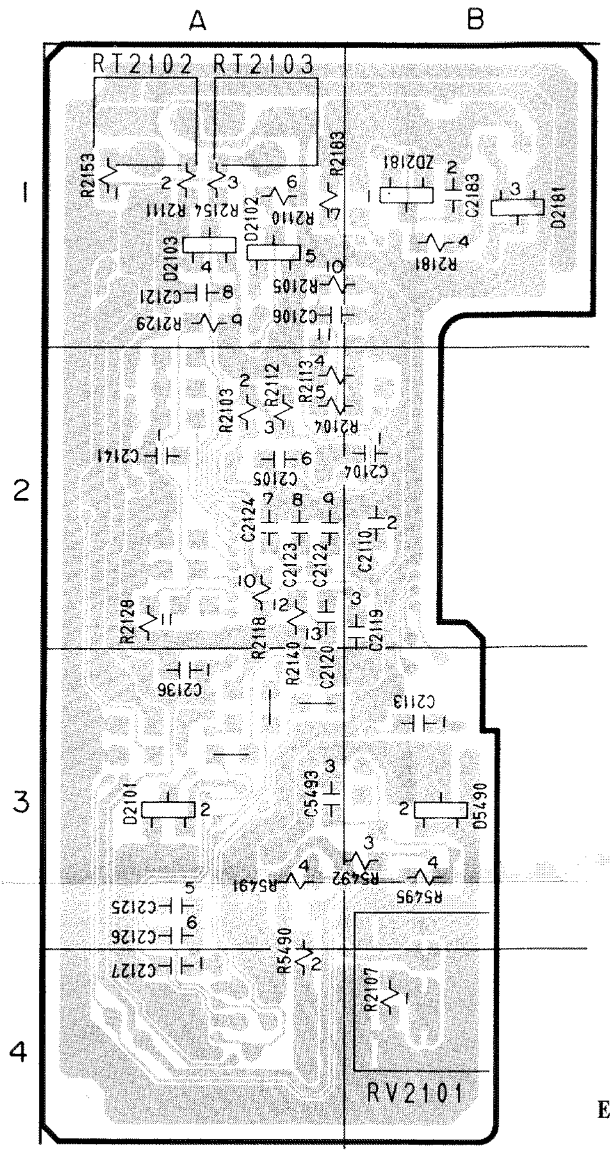

B
A
1
2
3
4
IC2181
IC2101
PG2101
PG2102
PG2103
PG2104
PG5490
X2101
L2101
L2181
L2182
C2186
C2188
C2102
C2114
C5490
C5492
R2101
R2102
R2106
R2115
R2119
R2125
R2126
R2142
R2148
R2182
R5493
R5494
RT2101
RT2104
RT2105
RT2106
RT2181

LEADLESS COMPONENT LOCATION GUIDE
COLOR ELECTRONIC VIEWFINDER -A-

Q5490	IMZ2(Z2)	3B-5
L2101	39μH	1B-4
L2181	33μH	3A-2
L2182	68μH	1A-1
RT2101	22kΩ	3A-7
RT2104	1kΩ	2A-5
RT2105	4.7kΩ	2A-1
RT2106	4.7kΩ	2A-3
RT2181	1kΩ	1A-3
X2101	3.58MHz	3A-3
R2101	3.3kΩ	2A-4
R2102	5.6kΩ	2B-1
R2106	180kΩ	3A-6
R2115	1MΩ	3B-2
R2119	1kΩ	3B-1
R2125	4.7kΩ	2A-2
R2126	4.7kΩ	1A-7
R2142	2.2kΩ	1A-6
R2148	22kΩ	3A-5
R2182	6.8kΩ	1A-2
R5493	1MΩ	3B-6
R5494	39Ω	3B-7
C2102	1μF	2B-2
C2108	47PF	1B-3
C2114	0.1μF	3B-3
C2186	4.7μF/25V	1B-2
C2188	47μF/16V	1B-1
C5490	100μF/6.3V	3A-4
C5492	0.068μF	3B-4

2-S2

COLOR ELECTRONIC VIEWFINDER CIRCUIT BOARD (Side B)

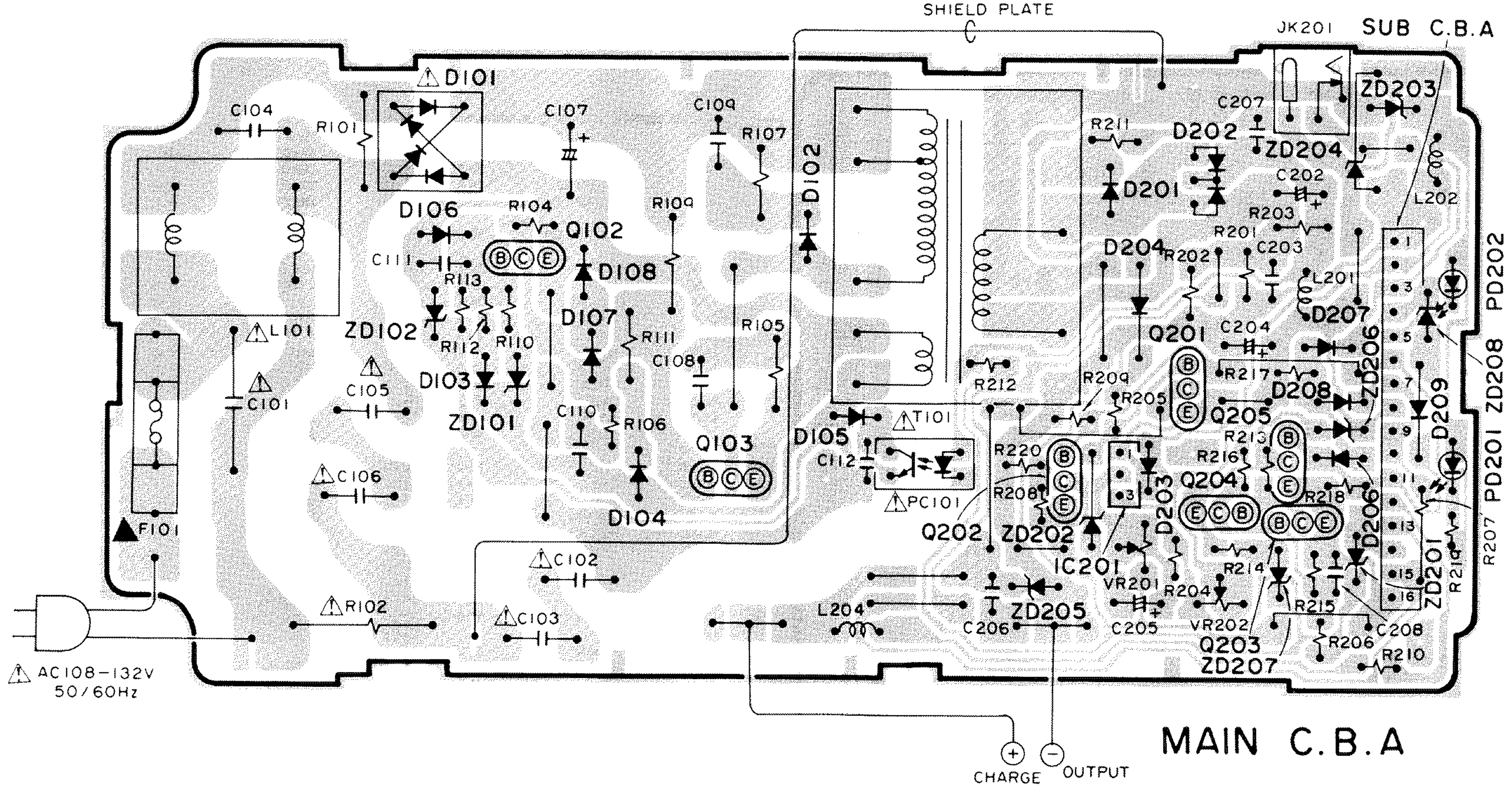

A
B
1
2
3
4
RT2102
RT2103
RV2101
D2101
D2102
D2103
D2181
ZD2181
D5490
R2153
R2154
R2111
R2110
R2183
R2181
R2105
R2129
R2103
R2112
R2113
R2104
R2128
R2118
R2140
R5490
R5491
R5492
R5495
R2107
C2121
C2106
C2141
C2105
C2124
C2123
C2122
C2110
C2120
C2119
C2136
C2113
C5493
C2125
C2126
C2127
C2183

LEADLESS COMPONENT LOCATION GUIDE
COLOR ELECTRONIC VIEWFINDER -B-

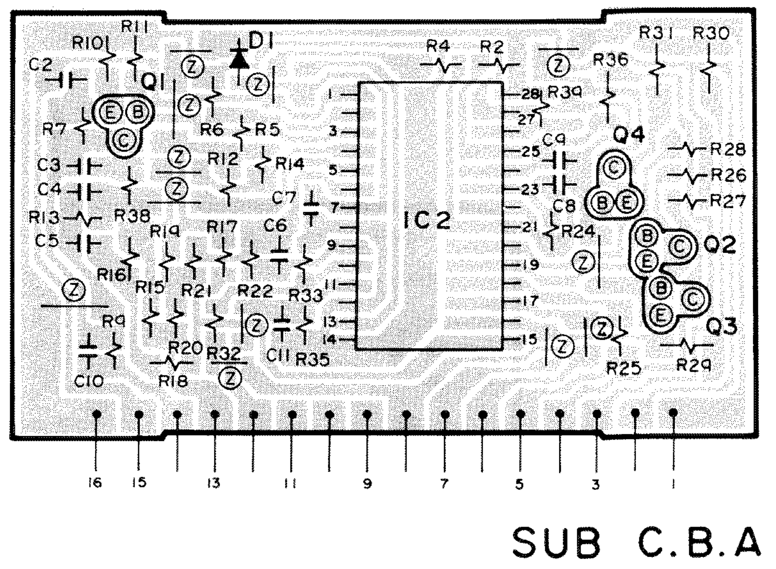
D2101	DAN217(BA)	3A-2
D2102	DAN217(BA)	1A-5
D2103	DAN217(BA)	1A-4
D2181	MA153WA(MO)	1B-3
D5490	DA217(BA)	3B-2
ZD2181	5.6M	1B-1
R2103	1kΩ	2A-2
R2104	18kΩ	2A-5
R2105	1MΩ	1A-10
R2107	150kΩ	4B-1
R2110	2.2kΩ	1A-6
R2111	3.9kΩ	1A-2
R2112	3.3kΩ	2A-3
R2113	3.9kΩ	2A-4
R2118	5.6kΩ	2A-10
R2128	3.9kΩ	2A-11
R2129	3.9kΩ	1A-9
R2140	8.2kΩ	2A-12
R2153	22kΩ	1A-1
R2154	22kΩ	1A-3
R2181	22kΩ	1B-4
R2183	5.6kΩ	1A-7
R5490	1kΩ	4A-2
R5491	10kΩ	3A-4
R5492	6.8kΩ	3B-3
R5495	1kΩ	3B-4
C2104	1μF	2B-1
C2105	6800PF	2A-6
C2106	1μF	1A-11
C2110	0.1μF	2B-2
C2113	0.047μF	3B-1
C2119	0.01μF	2B-3
C2120	0.47μF	2A-13
C2121	0.1μF	1A-8
C2122	0.068μF	2A-9
C2123	0.068μF	2A-8
C2124	0.068μF	2A-7
C2125	100PF	3A-5
C2126	100PF	3A-6
C2127	100PF	4A-1
C2136	1μF	3A-1
C2141	0.1μF	2A-1
C2183	1μF	1B-2
C5493	0.082μF	3A-3

2-S3

AC ADAPTER/CHARGER CIRCUIT BOARD (221355)

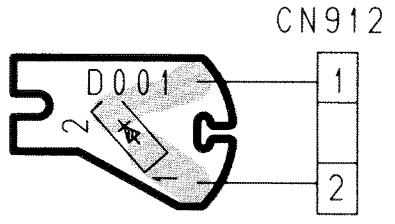

SHIELD PLATE
JK201
SUB C.B.A
MAIN C.B.A
⚠D101
D106
D102
D107
D108
D103
D104
D105
ZD101
ZD102
Q102
Q103
⚠L101
⚠C101
C104
R101
C107
C109
R107
R104
R109
C111
R113
R112
R110
R111
C108
R105
C105
C110
R106
⚠C106
⚠F101
⚠R102
⚠C102
⚠C103
C112
⚠PC101
⚠T101
R211
C207
D202
ZD203
ZD204
D201
C202
R203
R201
C203
D204
R202
L201
L202
D207
Q201
C204
D208
R212
R209
R205
R217
Q205
R220
R208
R216
Q204
R213
Q202
ZD202
D203
R218
D206
D209
PD202
ZD208
PD201
ZD201
R207
R219
IC201
VR201
R204
R214
R215
L204
ZD205
C206
C205
VR202
Q203
ZD207
R206
R210
C208
⚠AC108-132V 50/60Hz
CHARGE
OUTPUT

2-S4

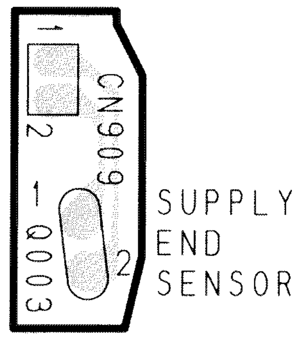

R101
R11
D1
R4
R2
R31
R30
C2
Q1
R36
R7
R6
R5
R39
R28
C3
R12
R14
C9
Q4
R26
C4
C7
R27
R13
R38
C6
IC2
C8
Q2
C5
R19
R17
R24
R16
R15
R21
R22
R33
R9
R20
R32
C11
R35
Q3
C10
R18
R25
R29
16 15 13 11 9 7 5 3 1
SUB C.B.A

NOTE : MAKE "Ⓩ" IS LEADLESS (CHIP) JUMPER.

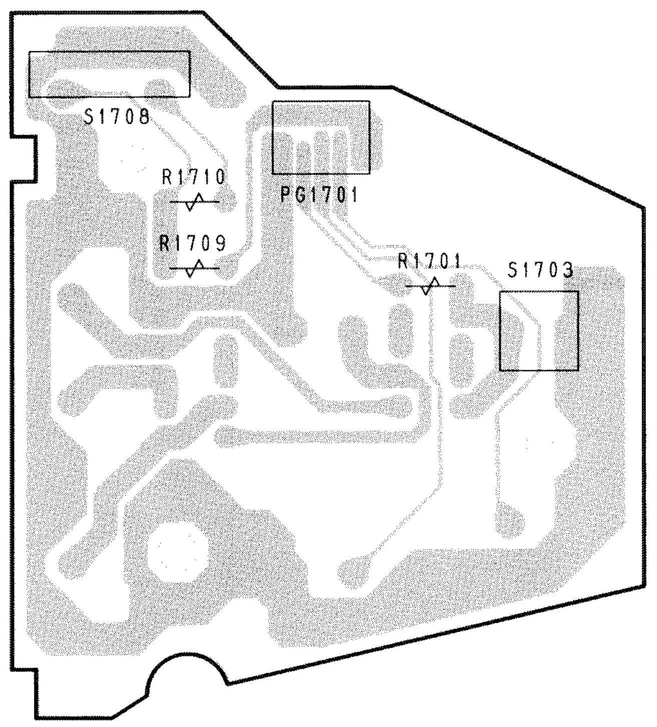
END LED CIRCUIT BOARD


CN912
D001
1
2

SUPPLY END SENSOR CIRCUIT BOARD

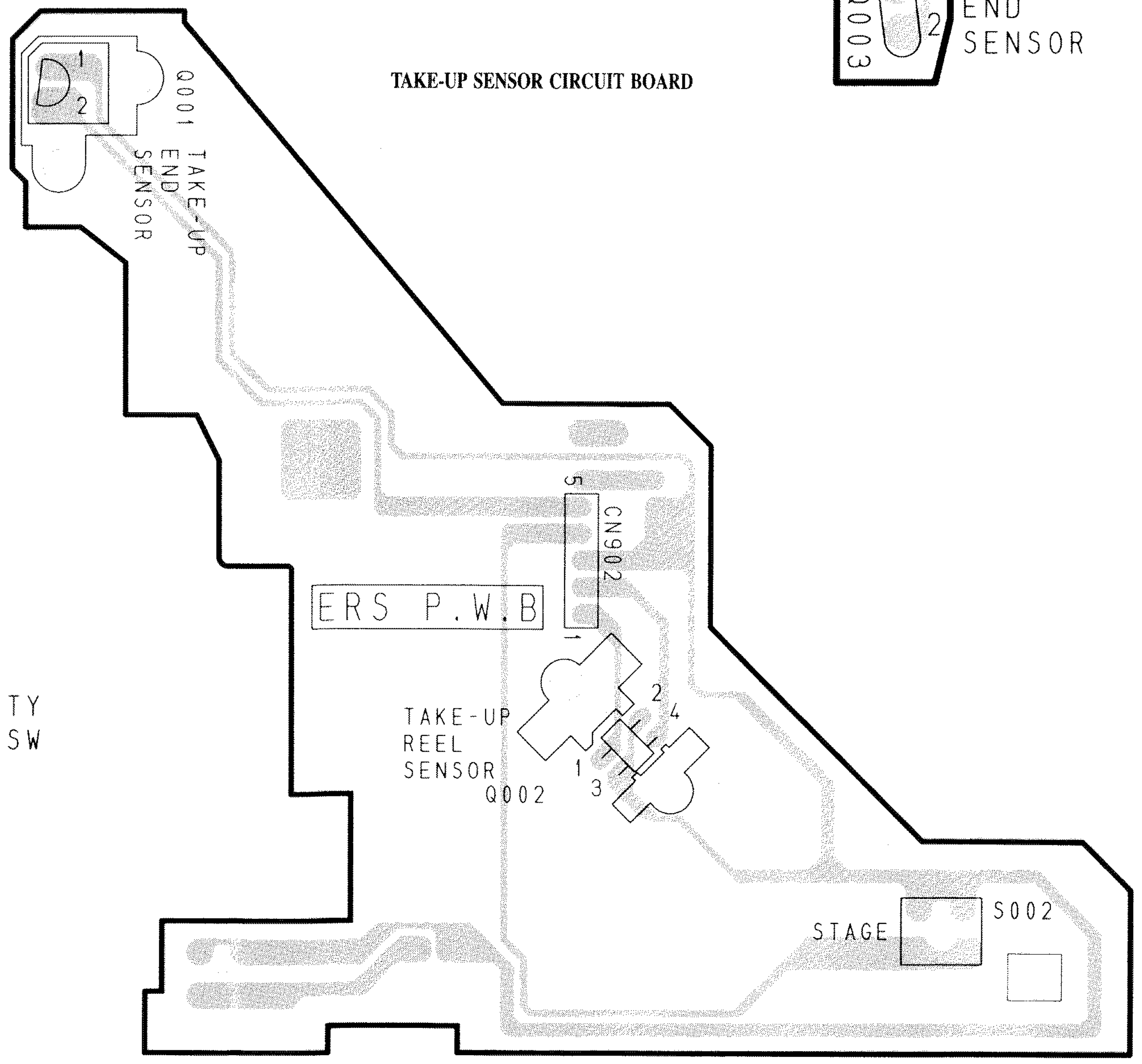

CN909
Q003
1
2
SUPPLY END SENSOR

CONTROL CIRCUIT BOARD

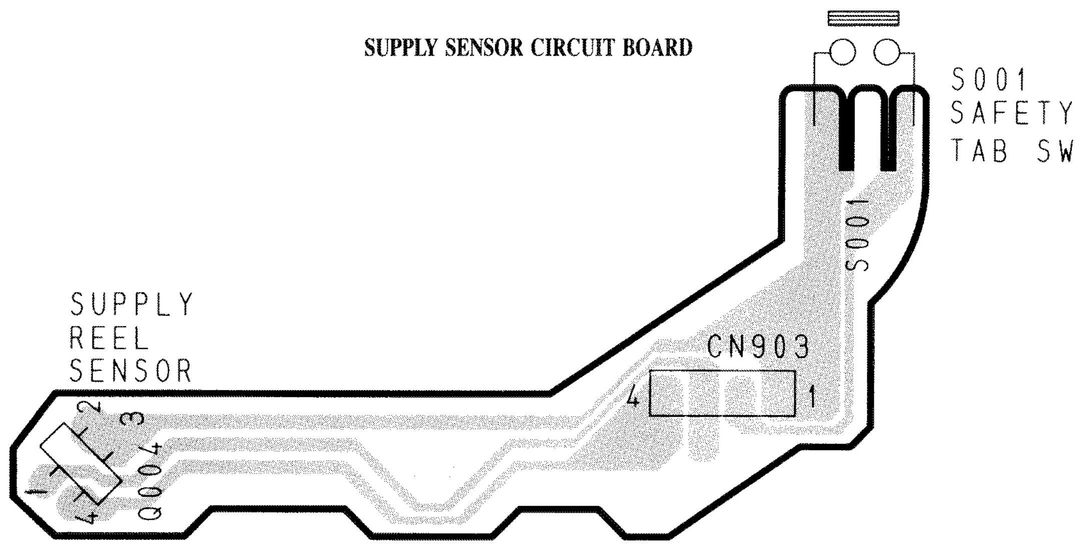

S1708
R1710
PG1701
R1709
R1701
S1703

CONTROL C.B.A

TAKE-UP SENSOR CIRCUIT BOARD


Q001 TAKE-UP END SENSOR
1
2
CN902
5
ERS P.W.B
TAKE-UP REEL SENSOR Q002
1
2
3
4
STAGE
S002

SUPPLY SENSOR CIRCUIT BOARD


S001 SAFETY TAB SW
S001
SUPPLY REEL SENSOR
Q004
1
2
3
4
CN903
4
1

2-S5

2-S6

2-S3

2-S7

BLANK

2-S7

2-S4

2-S8

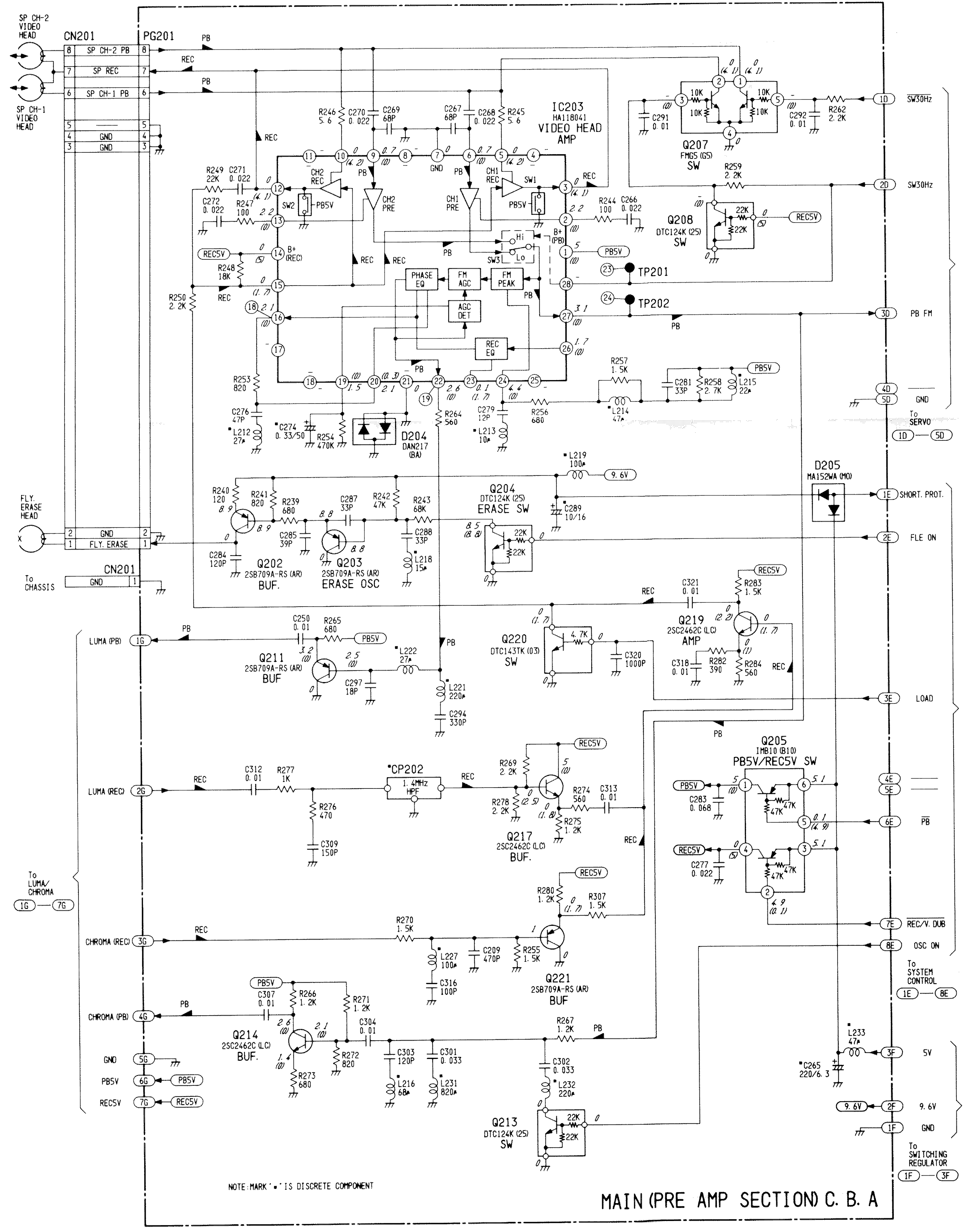
BLANK

2-S8

2-T1

2-T2

PREAMPLIFIER SCHEMATIC


SP CH-2 VIDEO HEAD
SP CH-1 VIDEO HEAD
FLY. ERASE HEAD
To CHASSIS
CN201
PG201
SP CH-2 PB
SP REC
SP CH-1 PB
GND
FLY. ERASE
PB
REC
IC203 HA118041 VIDEO HEAD AMP
CH2 REC
CH2 PRE
CH1 PRE
CH1 REC
SW1
SW2
SW3
PB5V
PHASE EQ
FM AGC
FM PEAK
AGC DET
REC EQ
Hi
Lo
B+ (PB)
B+ (REC)
TP201
TP202
Q207 FMG5 (G5) SW
Q208 DTC124K (25) SW
D204 DAN217 (BA)
D205 MA152WA (MO)
Q202 2SB709A-RS (AR) BUF.
Q203 2SB709A-RS (AR) ERASE OSC
Q204 DTC124K (25) ERASE SW
Q211 2SB709A-RS (AR) BUF
Q220 DTC143TK (03) SW
Q219 2SC2462C (LC) AMP
Q205 IMB10 (B10) PB5V/REC5V SW
CP202 1.4MHz HPF
Q217 2SC2462C (LC) BUF.
Q221 2SB709A-RS (AR) BUF
Q214 2SC2462C (LC) BUF.
Q213 DTC124K (25) SW
REC5V
PB5V
9.6V
SW30Hz
PB FM
GND
To SERVO
SHORT. PROT.
FLE ON
LOAD
PB
REC/V. DUB
OSC ON
To SYSTEM CONTROL
5V
9.6V
GND
To SWITCHING REGULATOR
LUMA (PB)
LUMA (REC)
To LUMA/CHROMA
CHROMA (REC)
CHROMA (PB)
GND
PB5V
REC5V
NOTE: MARK '*' IS DISCRETE COMPONENT
MAIN (PRE AMP SECTION) C. B. A

ALL INTEGRATED CIRCUITS AND MANY OTHER SEMICONDUCTORS ARE ELECTROSTATICALLY SENSITIVE AND REQUIRE SPECIAL HANDLING TECHNIQUES DESCRIBED UNDER "ELECTROSTATICALLY SENSITIVE (ES) DEVICES" IN THE SAFETY AND SERVICING PRECAUTIONS PUBLICATION.

CALLOUTS NEXT TO WIRING PLUGS INDICATE CONNECTIONS TO OTHER SCHEMATICS.

PRODUCT SAFETY NOTE
COMPONENTS WITH A (*) HAVE SPECIAL CHARACTERISTICS IMPORTANT TO SAFETY. BEFORE REPLACING ANY OF THESE COMPONENTS READ CAREFULLY THE PRODUCT SAFETY NOTICE IN THIS SERVICE DATA. DO NOT DEGRADE THE SAFETY OF THE SET THROUGH IMPROPER SERVICING.

VOLTAGES TAKEN IN THE SP PLAY MODE ( ) RECORD MODE

2-T5

2-T6

2-T3

BLANK

2-T3

2-T7

BLANK

2-T7

2-T4

BLANK

2-T4

2-T8

BLANK

2-T8

T.C. Corp
10 North Main St
Wharton NJ 07885
www.servicemanuals.net

2-U1 2-U2 2-U3 2-U4

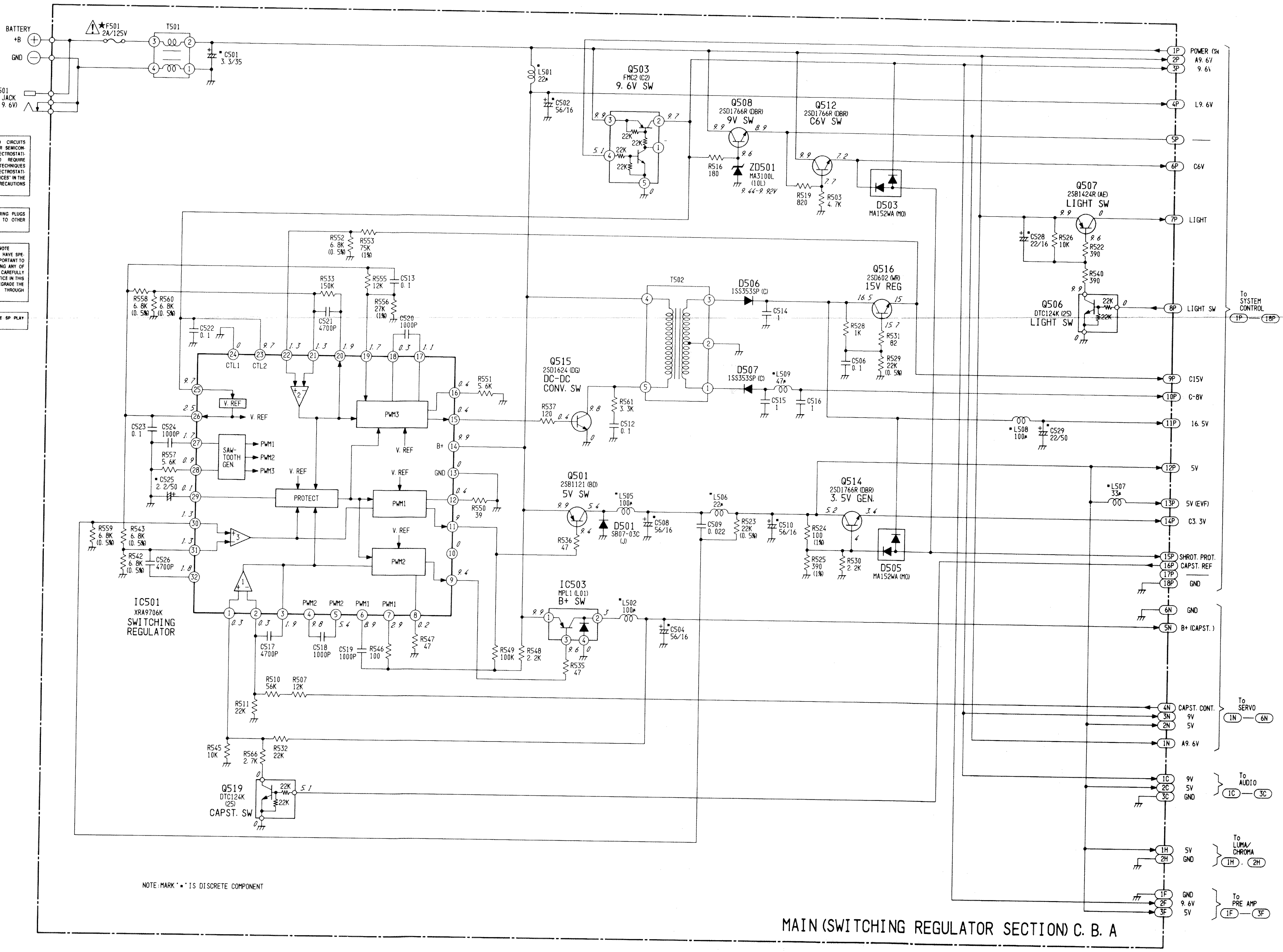
SWITCHING REGULATOR SCHEMATIC

ALL INTEGRATED CIRCUITS AND MANY OTHER SEMICONDUCTORS ARE ELECTROSTATICALLY SENSITIVE AND REQUIRE SPECIAL HANDLING TECHNIQUES DESCRIBED UNDER "ELECTROSTATICALLY SENSITIVE (ES) DEVICES" IN THE SAFETY AND SERVICING PRECAUTIONS PUBLICATION.

CALLOUTS NEXT TO WIRING PLUGS INDICATE CONNECTIONS TO OTHER SCHEMATICS.

PRODUCT SAFETY NOTE
COMPONENTS WITH A (★) HAVE SPECIAL CHARACTERISTICS IMPORTANT TO SAFETY. BEFORE REPLACING ANY OF THESE COMPONENTS READ CAREFULLY THE PRODUCT SAFETY NOTICE IN THIS SERVICE DATA. DO NOT DEGRADE THE SAFETY OF THE SET THROUGH IMPROPER SERVICING.

VOLTAGES TAKEN IN THE SP PLAY MODE ( ) RECORD MODE


BATTERY
+B
GND
JK501
DC JACK
(DC 9.6V)
★F501
2A/125V
T501
C501
3.3/35
L501
22µ
C502
56/16
Q503
FMC2 (C2)
9.6V SW
22K
Q508
2SD1766R (DBR)
9V SW
R516
180
ZD501
MA3100L
(10L)
9.44~9.92V
Q512
2SD1766R (DBR)
C6V SW
R519
820
R503
4.7K
D503
MA152WA (MO)
Q507
2SB1424R (AE)
LIGHT SW
C528
22/16
R526
10K
R522
390
R540
390
Q506
DTC124K (25)
LIGHT SW
1P POWER ON
2P A9.6V
3P 9.6V
4P L9.6V
5P
6P C6V
7P LIGHT
8P LIGHT SW
9P C15V
10P C-8V
11P 16.5V
12P 5V
13P 5V (EVF)
14P C3.3V
15P SHROT. PROT.
16P CAPST. REF
17P
18P GND
To SYSTEM CONTROL
1P — 18P
6N GND
5N B+ (CAPST.)
4N CAPST. CONT.
3N 9V
2N 5V
1N A9.6V
To SERVO
1N — 6N
1C 9V
2C 5V
3C GND
To AUDIO
1C — 3C
1H 5V
2H GND
To LUMA/CHROMA
1H, 2H
1F GND
2F 9.6V
3F 5V
To PRE AMP
1F — 3F
T502
D506
1SS353SP (C)
C514
1
Q516
2SD602 (WR)
15V REG
R528
1K
R531
82
C506
0.1
R529
22K
(0.5%)
D507
1SS353SP (C)
L509
47µ
C515
1
C516
1
Q515
2SD1624 (DG)
DC-DC
CONV. SW
R537
120
R561
3.3K
C512
0.1
L508
100µ
C529
22/50
L507
33µ
Q501
2SB1121 (BD)
5V SW
L505
100µ
D501
SB07-03C
(J)
C508
56/16
R536
47
L506
22µ
C509
0.022
R523
22K
(0.5%)
C510
56/16
Q514
2SD1766R (DBR)
3.5V GEN.
R524
100
(1%)
R525
390
(1%)
R530
2.2K
D505
MA152WA (MO)
IC503
MPL1 (L01)
B+ SW
L502
100µ
C504
56/16
R549
100K
R548
2.2K
R535
47
R552
6.8K
(0.5%)
R553
75K
(1%)
R533
150K
R555
12K
C513
0.1
R556
27K
(1%)
C520
1000P
C521
4700P
R558
6.8K
(0.5%)
R560
6.8K
(0.5%)
C522
0.1
CTL1
CTL2
V. REF
C523
0.1
C524
1000P
R557
5.6K
C525
2.2/50
SAW-
TOOTH
GEN.
PWM1
PWM2
PWM3
PROTECT
R551
5.6K
R550
39
B+
GND
R559
6.8K
(0.5%)
R543
6.8K
(0.5%)
R542
6.8K
(0.5%)
C526
4700P
IC501
XRA9706K
SWITCHING
REGULATOR
C517
4700P
C518
1000P
C519
1000P
R546
100
R547
47
R510
56K
R507
12K
R511
22K
R545
10K
R566
2.7K
R532
22K
Q519
DTC124K
(25)
CAPST. SW

NOTE: MARK '■' IS DISCRETE COMPONENT

MAIN (SWITCHING REGULATOR SECTION) C. B. A

2-U5 2-U6 2-U7 2-U8

AUTOFOCUS SCHEMATIC

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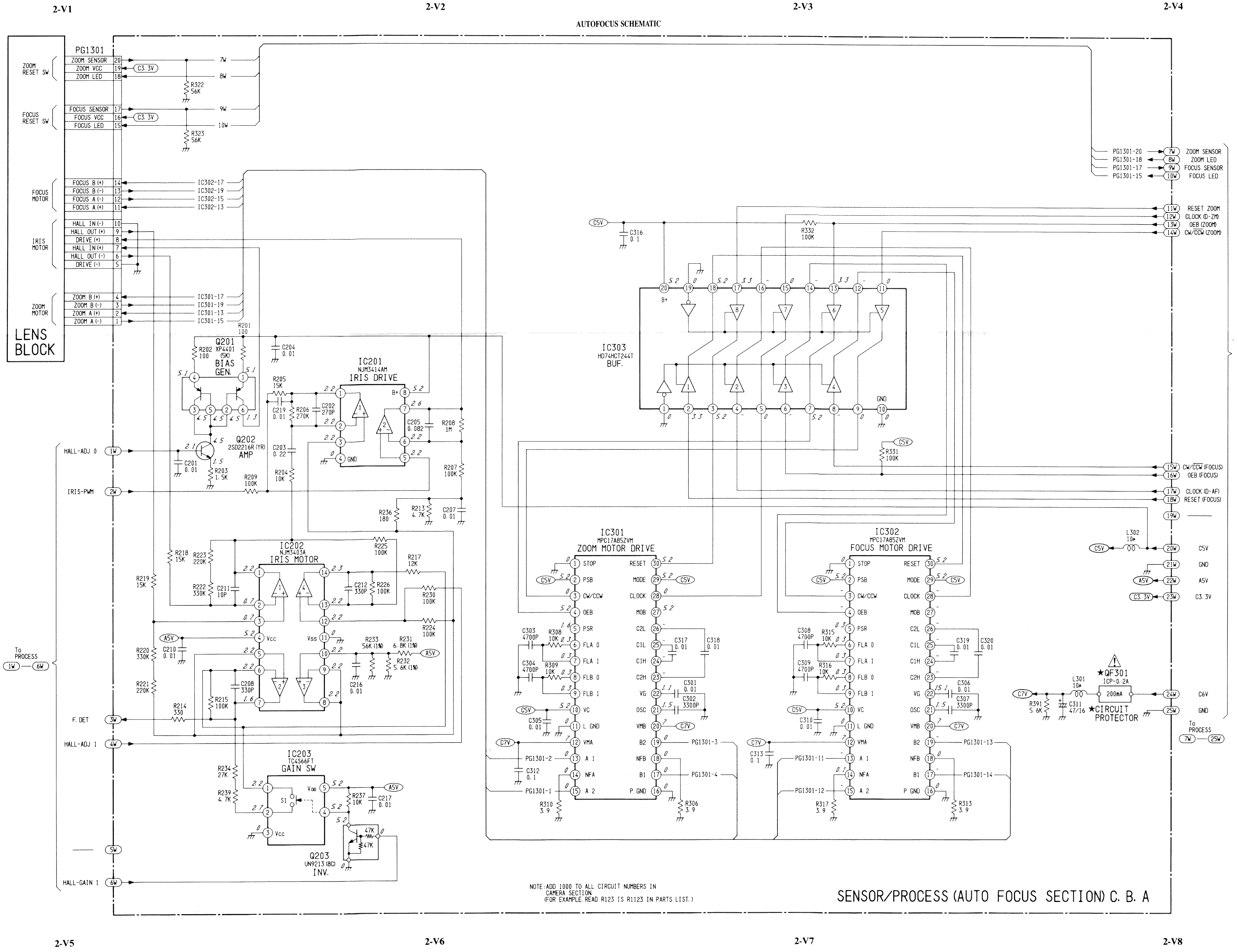
VOLTAGES TAKEN IN THE SP PLAY MODE ( ) RECORD MODE


2-V1
2-V2
2-V3
2-V4
LENS BLOCK
PG1301
ZOOM RESET SW
ZOOM SENSOR
ZOOM VCC
ZOOM LED
FOCUS RESET SW
FOCUS SENSOR
FOCUS VCC
FOCUS LED
FOCUS MOTOR
FOCUS B (+)
FOCUS B (-)
FOCUS A (-)
FOCUS A (+)
IRIS MOTOR
HALL IN (-)
HALL OUT (+)
DRIVE (+)
HALL IN (+)
HALL OUT (-)
DRIVE (-)
ZOOM MOTOR
ZOOM B (+)
ZOOM B (-)
ZOOM A (+)
ZOOM A (-)
C3.3V
R322 56K
R323 56K
IC302-17
IC302-19
IC302-15
IC302-13
IC301-17
IC301-19
IC301-13
IC301-15
Q201 XP4401 (5K) BIAS GEN.
R202 100
R201 100
C204 0.01
Q202 2SD2216R (YR) AMP
C201 0.01
R203 1.5K
R209 100K
R205 15K
C219 0.01
R206 270K
C202 270P
C203 0.22
R204 10K
IC201 NJM3414AM IRIS DRIVE
GND
C205 0.082
R208 1M
R207 100K
R236 180
R213 4.7K
C207 0.01
IC202 NJM3403A IRIS MOTOR
R218 15K
R223 220K
R225 100K
R217 12K
R219 15K
R222 330K
C211 10P
C212 330P
R226 100K
R230 100K
R224 100K
A5V
Vcc
Vss
R233 56K (1%)
R231 6.8K (1%)
R232 5.6K (1%)
R220 330K
C210 0.01
R221 220K
C208 330P
R215 100K
C216 0.01
R214 330
IC203 TC4S66FT GAIN SW
R234 27K
R239 4.7K
S1
VDD
R237 10K
C217 0.01
Q203 UN9213 (8C) INV.
47K
HALL-ADJ 0
IRIS-PWM
F. DET
HALL-ADJ 1
HALL-GAIN 1
To PROCESS
1W — 6W
C5V
C316 0.1
R332 100K
IC303 HD74HCT244T BUF.
B+
R331 100K
IC301 MPC17A85ZVM ZOOM MOTOR DRIVE
STOP
PSB
CW/CCW
OEB
PSR
FLA 0
FLA 1
FLB 0
FLB 1
VC
L GND
VMA
A 1
NFA
A 2
RESET
MODE
CLOCK
MOB
C2L
C1L
C1H
C2H
VG
OSC
VMB
B2
NFB
B1
P GND
C303 4700P
R308 10K
C304 4700P
R309 10K
C305 0.01
C312 0.1
R310 3.9
C317 0.01
C318 0.01
C301 0.01
C302 3300P
R306 3.9
PG1301-1
PG1301-2
PG1301-3
PG1301-4
C7V
IC302 MPC17A85ZVM FOCUS MOTOR DRIVE
C308 4700P
R315 10K
C309 4700P
R316 10K
C310 0.01
C313 0.1
R317 3.9
C319 0.01
C320 0.01
C306 0.01
C307 3300P
R313 3.9
PG1301-11
PG1301-12
PG1301-13
PG1301-14
PG1301-20
PG1301-18
PG1301-17
PG1301-15
ZOOM SENSOR
ZOOM LED
FOCUS SENSOR
FOCUS LED
RESET ZOOM
CLOCK (D-ZM)
OEB (ZOOM)
CW/CCW (ZOOM)
CW/CCW (FOCUS)
OEB (FOCUS)
CLOCK (D-AF)
RESET (FOCUS)
L302 10μ
C5V
GND
A5V
C3.3V
★QF301 ICP-0.2A
200mA
★CIRCUIT PROTECTOR
L301 10μ
R391 5.6K
C311 47/16
C6V
To PROCESS
7W — 25W
2-V5
2-V6
2-V7
2-V8

NOTE: ADD 1000 TO ALL CIRCUIT NUMBERS IN CAMERA SECTION.
(FOR EXAMPLE: READ R123 IS R1123 IN PARTS LIST.)

SENSOR/PROCESS (AUTO FOCUS SECTION) C. B. A

ELECTRONIC VIEWFINDER (EVF) SCHEMATIC

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PRODUCT SAFETY NOTE
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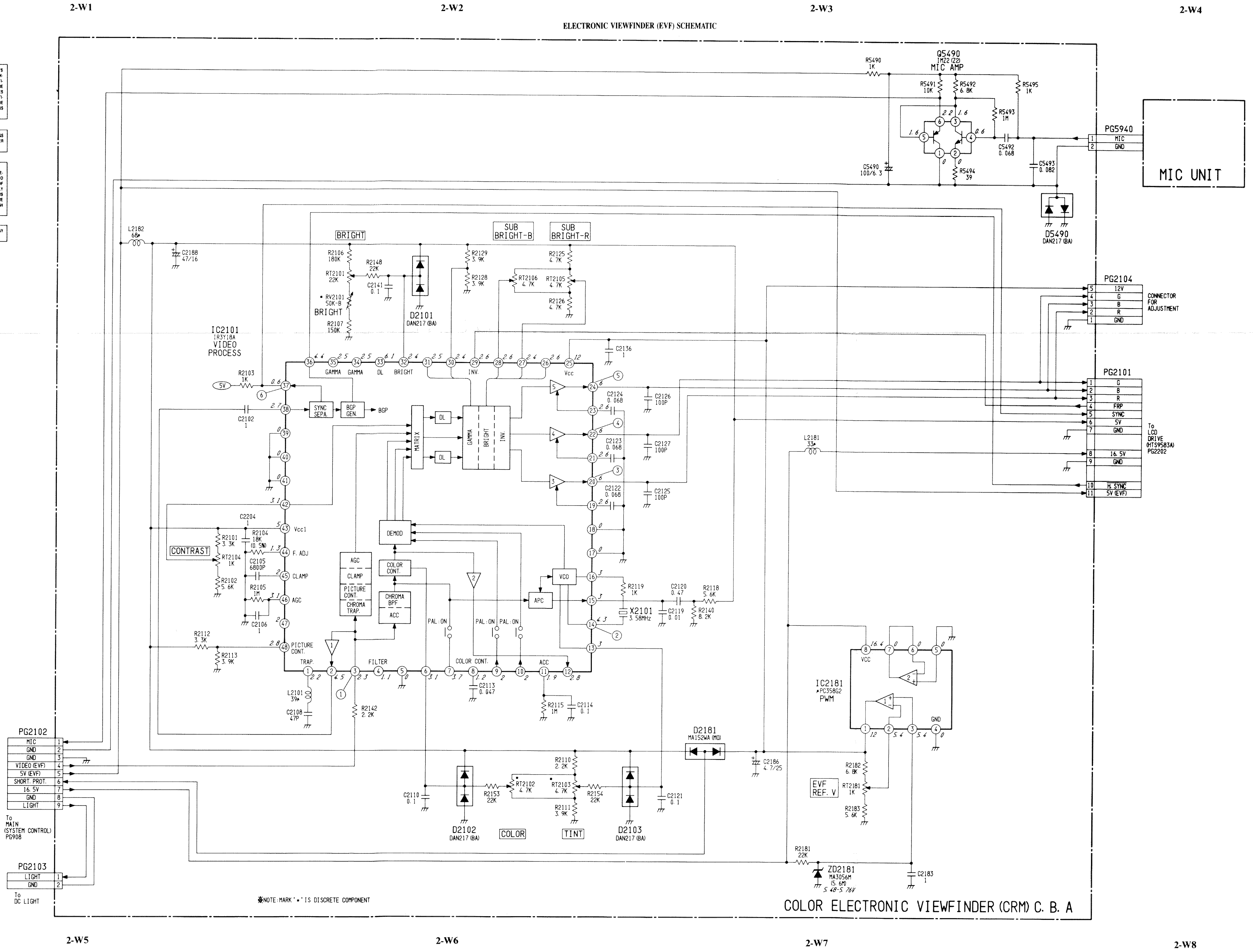
VOLTAGES TAKEN IN THE SP PLAY MODE ( ) RECORD MODE


2-W1
2-W2
2-W3
2-W4
Q5490
IMZ2 (Z2)
MIC AMP
R5490 1K
R5491 10K
R5492 6.8K
R5495 1K
R5493 1M
C5492 0.068
C5490 100/6.3
C5493 0.082
R5494 39
PG5940
MIC
GND
MIC UNIT
D5490
DAN217 (BA)
L2182 68µ
C2188 47/16
BRIGHT
SUB BRIGHT-B
SUB BRIGHT-R
R2106 180K
RT2101 22K
R2148 22K
C2141 0.1
• RV2101 50K-B
BRIGHT
R2107 150K
D2101
DAN217 (BA)
R2129 3.9K
R2128 3.9K
R2125 4.7K
RT2106 4.7K
RT2105 4.7K
R2126 4.7K
IC2101
IR3Y18A
VIDEO PROCESS
PG2104
12V
G
B
R
GND
CONNECTOR FOR ADJUSTMENT
C2136 1
GAMMA
GAMMA
DL
BRIGHT
INV.
Vcc
R2103 1K
5V
SYNC SEPA.
BGP GEN.
BGP
C2102 1
MATRIX
DL
DL
GAMMA
BRIGHT
INV.
C2124 0.068
C2126 100P
C2123 0.068
C2127 100P
C2122 0.068
C2125 100P
PG2101
G
B
R
FRP
SYNC
5V
GND
16.5V
GND
H. SYNC
5V (EVF)
To LCD DRIVE (HTS9583A) PG2202
L2181 33µ
C2204 1
Vcc1
R2101 3.3K
R2104 18K (0.5%)
F. ADJ
CONTRAST
RT2104 1K
C2105 6800P
CLAMP
R2102 5.6K
R2105 1M
AGC
C2106 1
DEMOD
AGC
CLAMP
PICTURE CONT.
CHROMA TRAP.
COLOR CONT.
CHROMA BPF
ACC
VCO
APC
R2119 1K
C2120 0.47
R2118 5.6K
X2101 3.58MHz
C2119 0.01
R2140 8.2K
PAL:ON
PAL:ON
PAL:ON
R2112 3.3K
R2113 3.9K
PICTURE CONT.
TRAP.
FILTER
COLOR CONT.
ACC
L2101 39µ
C2108 47P
R2142 2.2K
C2113 0.047
R2115 1M
C2114 0.1
IC2181
•PC358G2
PWM
VCC
GND
PG2102
MIC
GND
GND
VIDEO (EVF)
5V (EVF)
SHORT. PROT.
16.5V
GND
LIGHT
To MAIN (SYSTEM CONTROL) PG908
D2181
MA152WA (MO)
C2186 4.7/25
R2110 2.2K
C2110 0.1
R2153 22K
RT2102 4.7K
RT2103 4.7K
R2154 22K
C2121 0.1
R2111 3.9K
D2102
DAN217 (BA)
COLOR
TINT
D2103
DAN217 (BA)
R2182 6.8K
EVF REF. V
RT2181 1K
R2183 5.6K
PG2103
LIGHT
GND
To DC LIGHT
R2181 22K
ZD2181
MA3056M (5.6M)
5.48-5.76V
C2183 1
※NOTE: MARK "•" IS DISCRETE COMPONENT
COLOR ELECTRONIC VIEWFINDER (CRM) C.B.A
2-W5
2-W6
2-W7
2-W8

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Wharton NJ 07885
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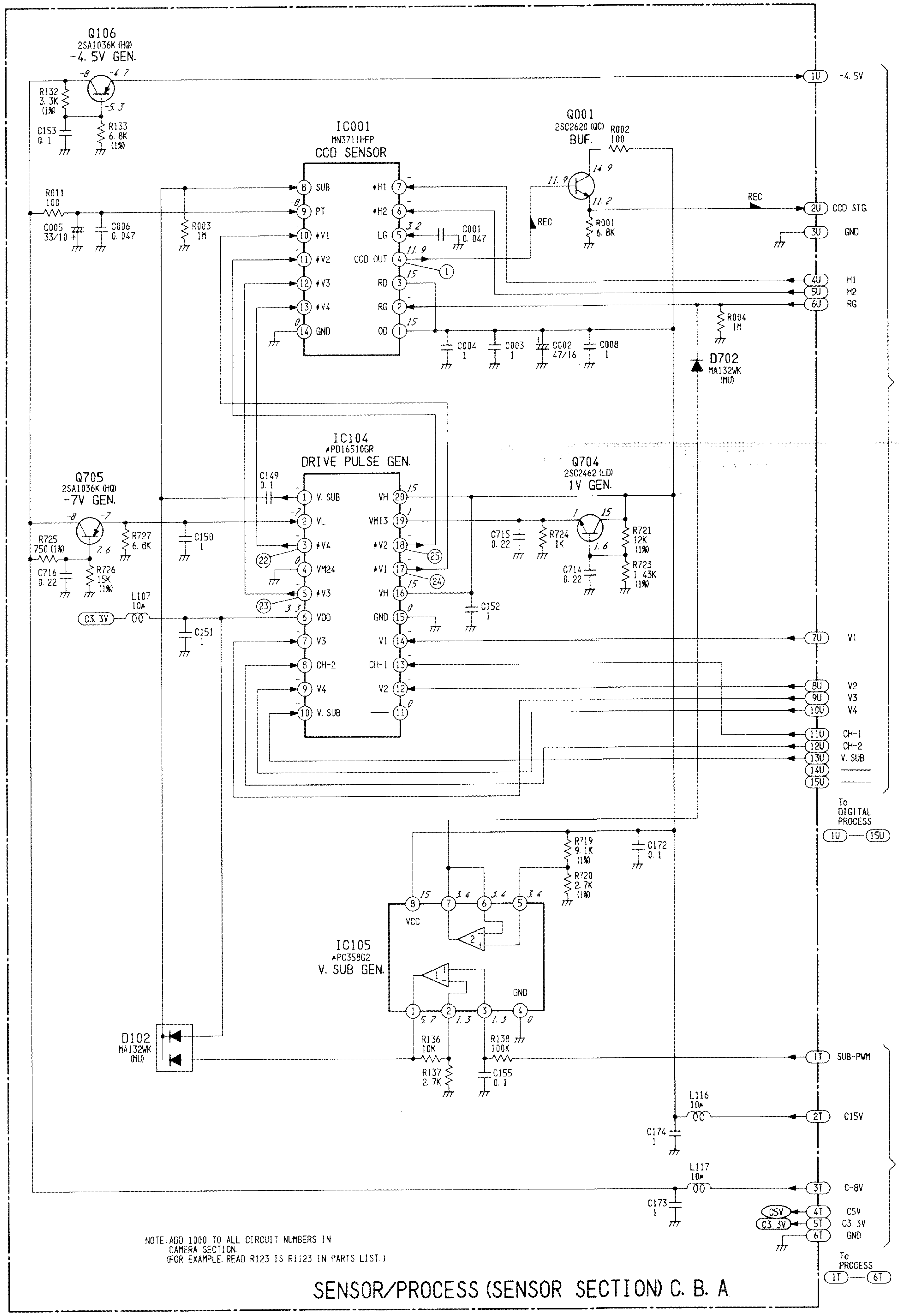
SENSOR SCHEMATIC


Q106
2SA1036K (HQ)
-4.5V GEN.
IC001
MN3711HFP
CCD SENSOR
Q001
2SC2620 (QC)
BUF.
IC104
μPD16510GR
DRIVE PULSE GEN.
Q705
2SA1036K (HQ)
-7V GEN.
Q704
2SC2462 (LD)
1V GEN.
D702
MA132WK (MU)
IC105
μPC358G2
V. SUB GEN.
D102
MA132WK (MU)
-4.5V
CCD SIG.
GND
H1
H2
RG
V1
V2
V3
V4
CH-1
CH-2
V. SUB
To DIGITAL PROCESS
SUB-PWM
C15V
C-8V
C5V
C3.3V
GND
To PROCESS
NOTE: ADD 1000 TO ALL CIRCUIT NUMBERS IN CAMERA SECTION.
(FOR EXAMPLE, READ R123 IS R1123 IN PARTS LIST.)
SENSOR/PROCESS (SENSOR SECTION) C. B. A

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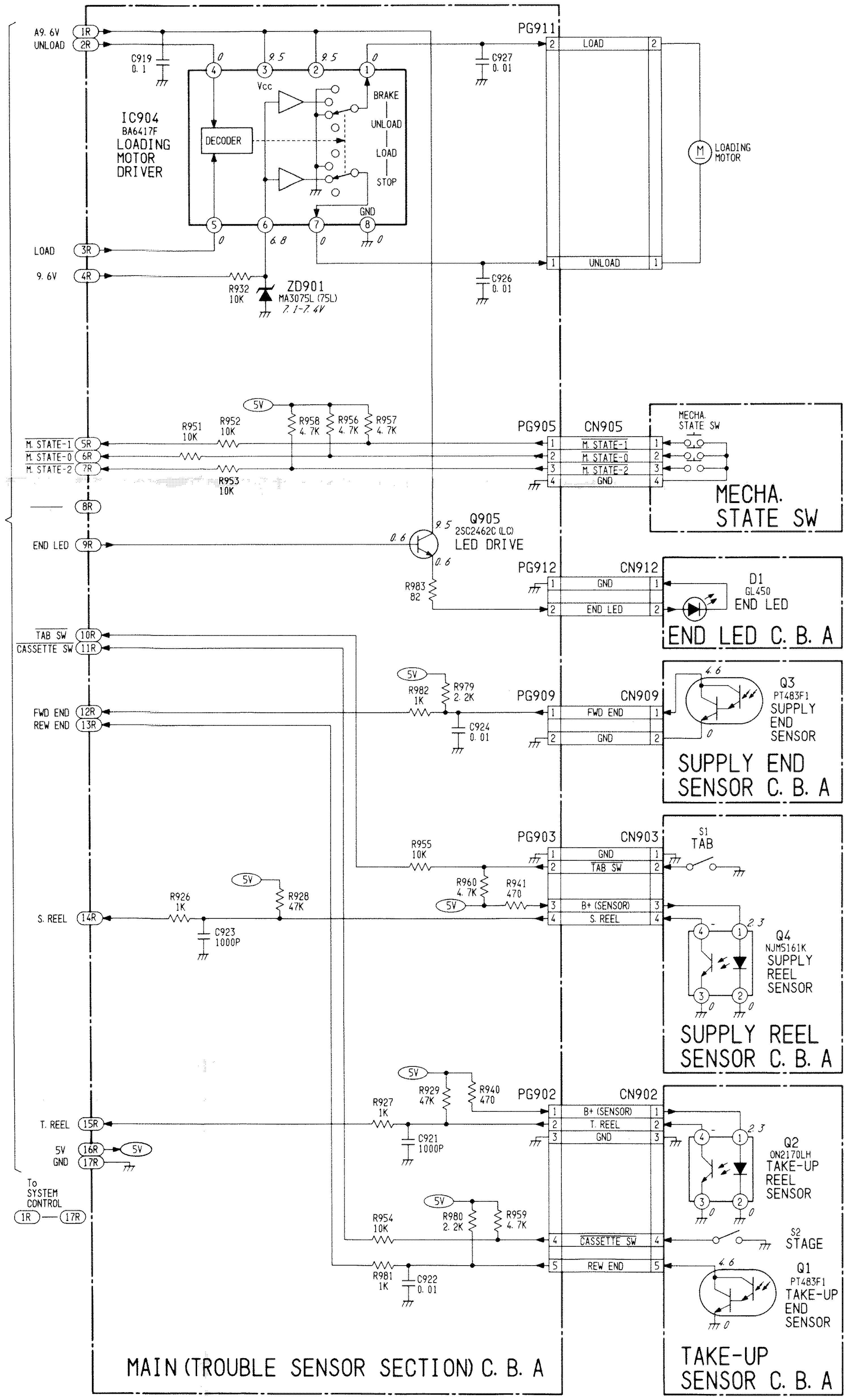
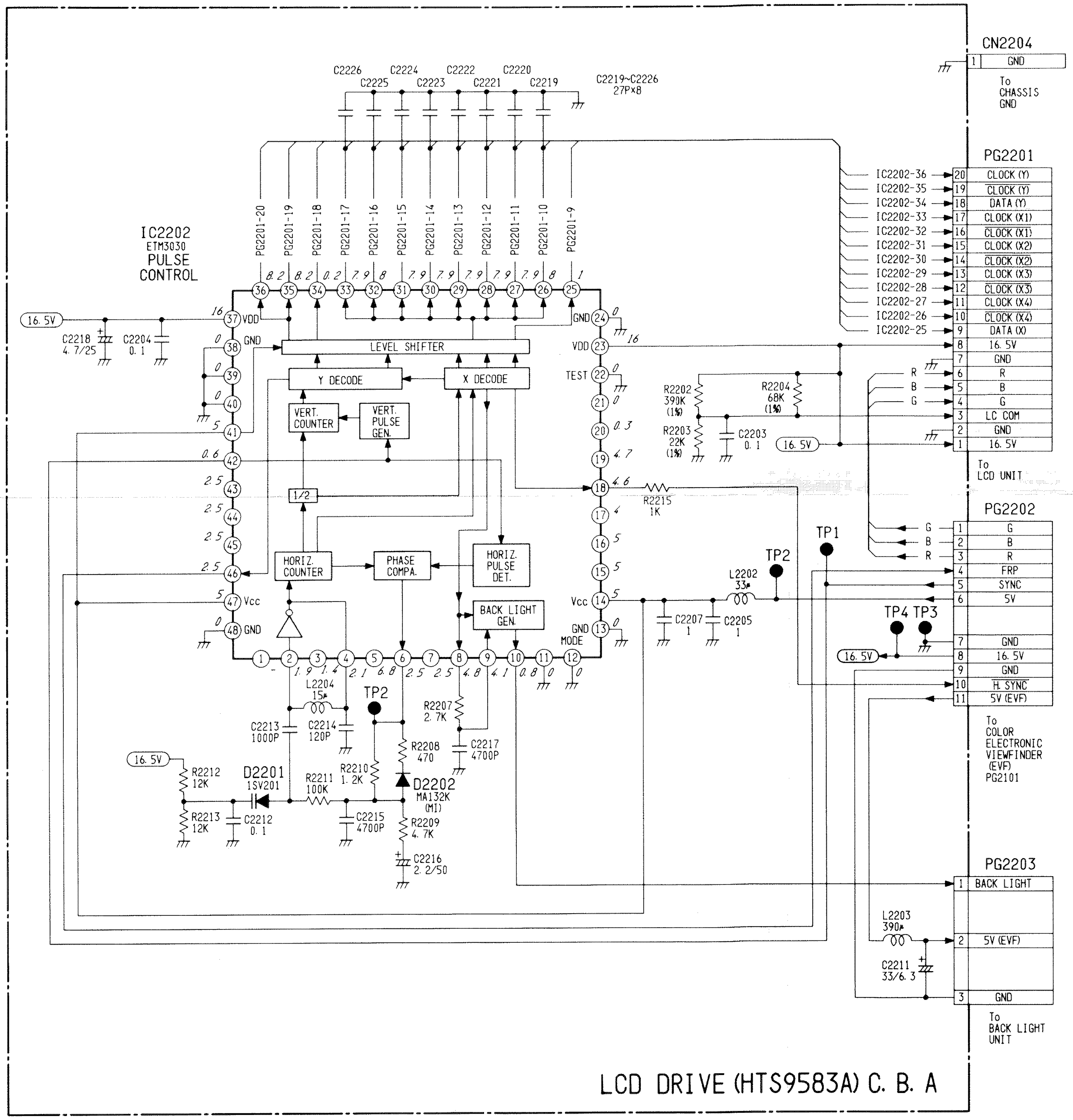
VOLTAGES TAKEN IN THE SP PLAY MODE ( ) RECORD MODE

TROUBLE SENSOR SCHEMATIC


A9.6V
UNLOAD
LOAD
9.6V
IC904
BA6417F
LOADING MOTOR DRIVER
DECODER
BRAKE
UNLOAD
LOAD
STOP
ZD901
MA3075L (75L)
PG911
LOAD
UNLOAD
LOADING MOTOR
M. STATE-1
M. STATE-0
M. STATE-2
PG905
CN905
MECHA. STATE SW
END LED
Q905
2SC2462C (LC)
LED DRIVE
PG912
CN912
D1
GL450
END LED
END LED C. B. A
TAB SW
CASSETTE SW
FWD END
REW END
PG909
CN909
Q3
PT483F1
SUPPLY END SENSOR
SUPPLY END SENSOR C. B. A
S. REEL
PG903
CN903
S1
TAB
Q4
NJM5161K
SUPPLY REEL SENSOR
SUPPLY REEL SENSOR C. B. A
T. REEL
5V
GND
PG902
CN902
Q2
ON2170LH
TAKE-UP REEL SENSOR
S2
STAGE
Q1
PT483F1
TAKE-UP END SENSOR
To SYSTEM CONTROL
MAIN (TROUBLE SENSOR SECTION) C. B. A
TAKE-UP SENSOR C. B. A

LCD DRIVE SCHEMATIC


IC2202
ETM3030
PULSE
CONTROL
CN2204
GND
To CHASSIS GND
PG2201
CLOCK (Y)
DATA (Y)
CLOCK (X1)
CLOCK (X2)
CLOCK (X3)
CLOCK (X4)
DATA (X)
16.5V
LC COM
To LCD UNIT
PG2202
FRP
SYNC
5V
H. SYNC
5V (EVF)
To COLOR ELECTRONIC VIEWFINDER (EVF) PG2101
PG2203
BACK LIGHT
To BACK LIGHT UNIT
LEVEL SHIFTER
Y DECODE
X DECODE
VERT. COUNTER
VERT. PULSE GEN.
1/2
HORIZ. COUNTER
PHASE COMPA.
HORIZ. PULSE DET.
BACK LIGHT GEN.
TP1
TP2
TP3
TP4
D2201
1SV201
D2202
MA132K
LCD DRIVE (HTS9583A) C. B. A

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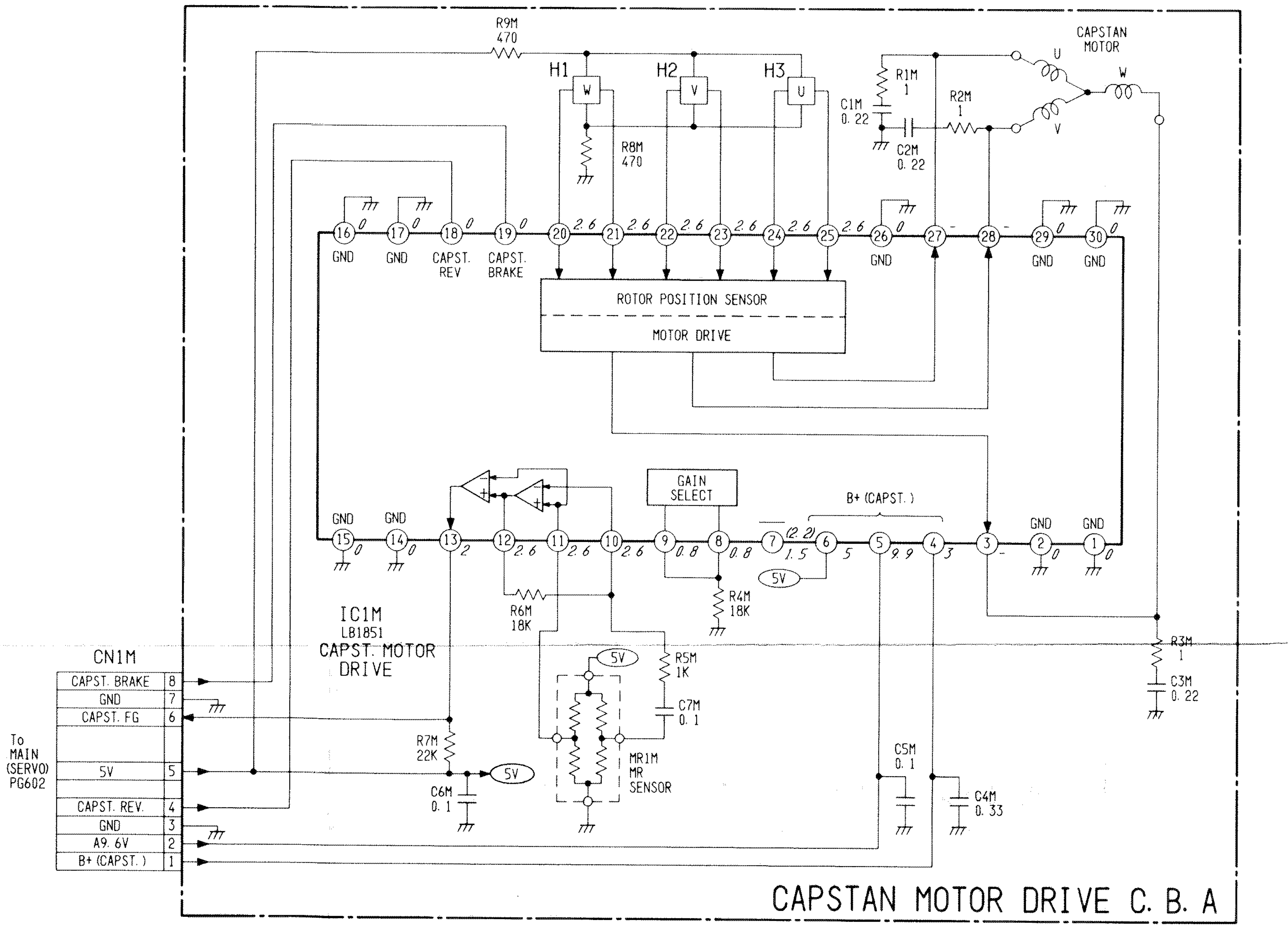
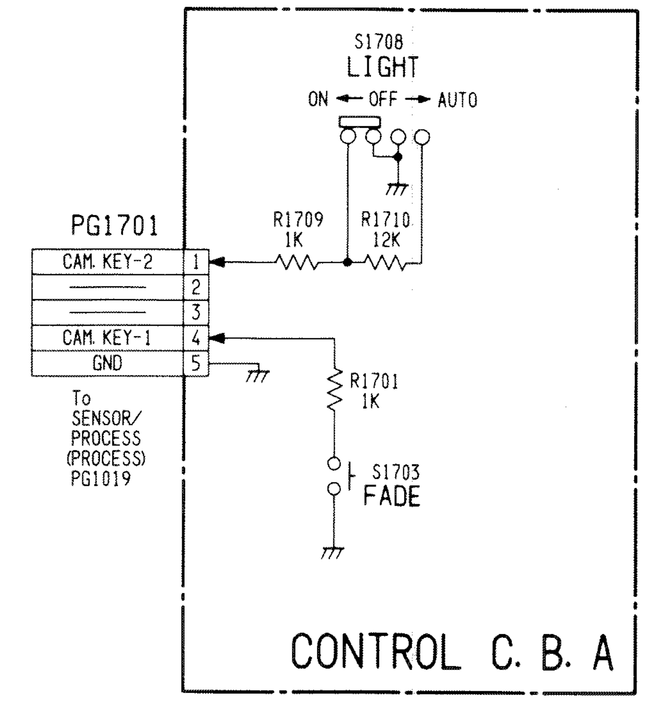
VOLTAGES TAKEN IN THE SP PLAY MODE ( ) RECORD MODE

CAPSTAN MOTOR DRIVE SCHEMATIC


CAPSTAN MOTOR
H1
H2
H3
ROTOR POSITION SENSOR
MOTOR DRIVE
GAIN SELECT
B+ (CAPST.)
IC1M
LB1851
CAPST. MOTOR DRIVE
CAPST. REV
CAPST. BRAKE
MR1M
MR SENSOR
CN1M
CAPST. BRAKE
GND
CAPST. FG
5V
CAPST. REV.
A9.6V
B+ (CAPST.)
To MAIN (SERVO) PG602
CAPSTAN MOTOR DRIVE C. B. A

CONTROL SCHEMATIC


S1708
LIGHT
ON ← OFF → AUTO
PG1701
CAM. KEY-2
CAM. KEY-1
GND
R1709 1K
R1710 12K
R1701 1K
S1703
FADE
To SENSOR/PROCESS (PROCESS) PG1019
CONTROL C. B. A

BLANK

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